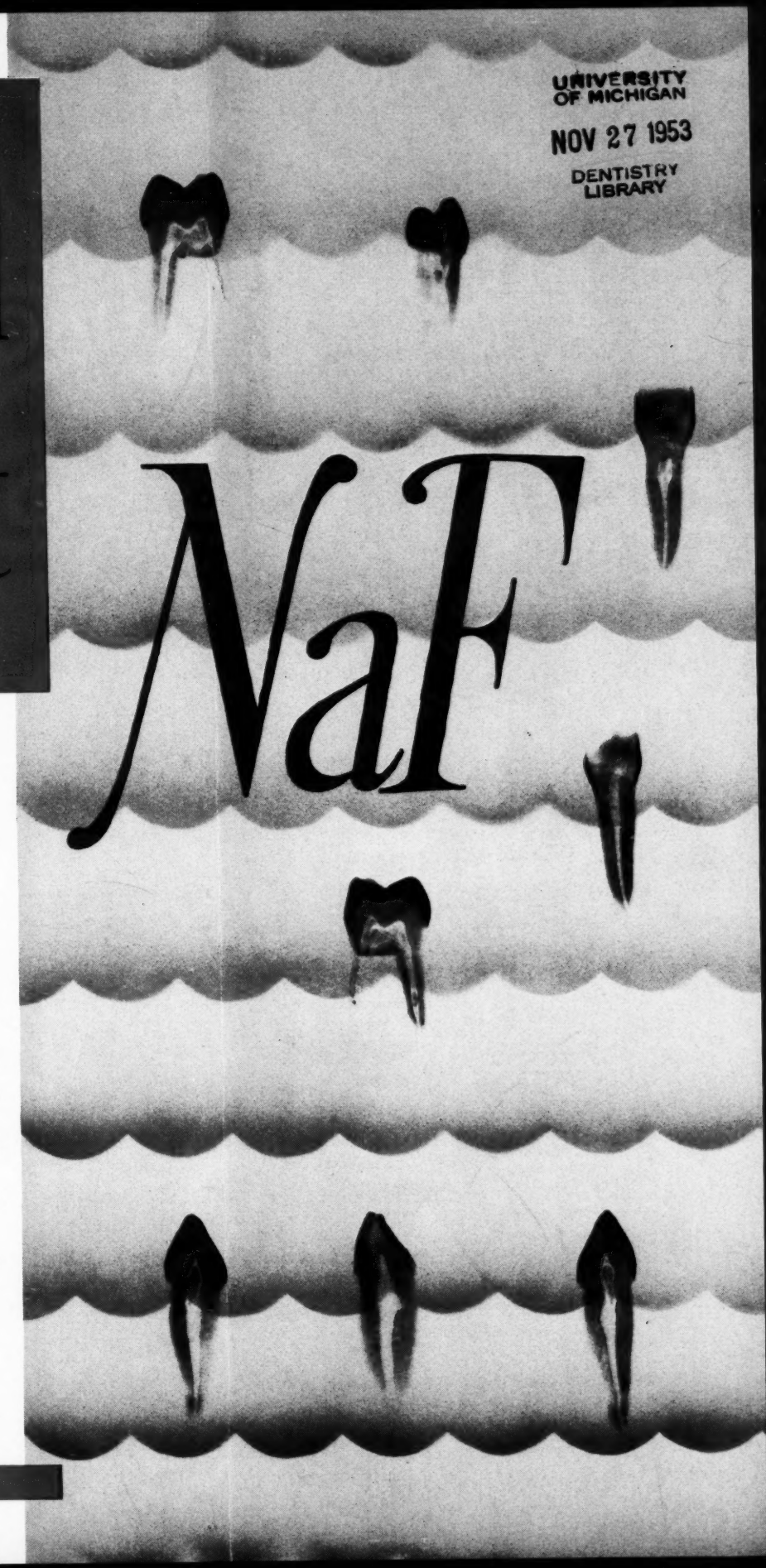
Dental Digest



November 1953

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OUTSTANDING...

IN BOTH MATERIALS

VERI-CHROME PORCELAIN AND VERIDENT PLASTIC

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USE OR SPECIFY FIVE-PHASE ANTERIORS IN PORCELAIN OR VERIDENT PLASTIC WITH THE VERI-CHROME COLOR GUIDE

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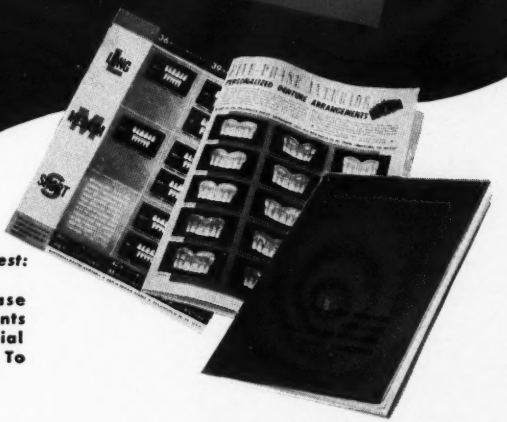

FREE ***This helpful literature is available upon request:***

1. **Illustrated Mold Chart**
2. **60 Personalized Five-Phase Anterior Denture Arrangements**
3. **32-page Book: Varied Labial Surfaces and Their Relation To Scientific Tooth Selection**

FIVE-PHASE

ANTERIORS

Vol. 59, No. 11

Dental Digest

Registered in U.S. Patent Office

NOVEMBER 1953

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MELVIN E. PAGE, D.D.S. (University of Michigan, College of Dentistry, 1919) a clinician with extensive experience is the founder of the Biochemical Foundation in St. Petersburg, Florida. With the cooperation of D. L. Brooks, his assistant in dental medicine, Doctor Page presents the third installment of a series of articles appearing under the general title, BODY CHEMISTRY IN HEALTH AND DISEASE.

KARL W. BRUCE, D.D.S., M.S. (University of Nebraska, College of Dentistry, 1940), M.S. (University of Minnesota, College of Dentistry, 1949) has to his credit eighteen publications in which he is represented either as sole or as joint author. Instructor in oral surgery and oral pathology at the Mayo Foundation, Doctor Bruce is a member of ten scientific and honorary professional societies. His first presentation in DIGEST is MANDIBULAR CYST OF UNCERTAIN ORIGIN: REPORT OF A CASE.

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EDWARD J. RYAN, B.S., D.D.S., Editor

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The BIOCHEMISTRY *of Fluorides*

CHARLES DILLON, D.D.S., L.D.S., Inverness-Shire, Scotland

DIGEST

This article accomplishes a threefold objective (a) the biochemistry of fluorides is described concisely, (b) it is shown that mottling of teeth and bone is due to the imbibition of calcium-reactable fluorine salts in drinking water, and (c) it is demonstrated that the factors responsible for mottling of teeth and bone create progressive conditions which ultimately result in premature pathologic aging of bone and of the alveolar processes, and degeneration of the attachment apparatus ending in premature loss of teeth from periodontal disease.

Results of Experimental Tests in the Biochemistry of Fluorides

In a previous paper the author[1] published details of experimental tests indicating the reactions occurring between several comparatively insoluble calcium salts and soluble fluorides. These tests were carried out in what may be termed high concentrations of salts; for example, 1 gram of calcium phosphate was suspended in 100 milliliters of 1 per cent sodium fluoride solution for forty-eight hours.

Indicated Reaction—In this test the insoluble matter was found to contain 62 per cent of calcium fluoride, indicating the following reaction:

$$Ca_3(PO_4)_2 + 6NaF \rightarrow 2Na_3PO_4 + 3CaF_2$$

Reaction in Low Concentrations of Salts—The direction of the action indicated, it may be argued, is influenced by the insoluble nature of calcium fluoride and may not be true for extremely low concentrations of salts; that is, concentrations below the level of solubility of calcium fluoride when the salts may be considered as in the ionized state.

Formula Sought for All Concentrations—One of the products of the reaction indicated was found to be the highly soluble sodium phosphate. If it could be shown that this salt occurred as an end-product in extremely low concentrations of salts, *the formula described would hold good for all concentrations.*

Unique Property of Bone—Bone possesses the unique property of withdrawing and retaining calcium fluoride, one of the end-products of the interaction between any calcium salt and a soluble fluoride, in concentrations where the salts may be considered to be wholly ionized and in fact may be said to be equivalent to precipitation.

Early Discovery and Use of Property—Smith and Smith[2] were the first to discover the property of bone and used it effectively in reducing the fluorine content of water supplies in the field to negligible amounts.

Confirmation of Initial Conclusions—In confirming the conclusions just stated Dillon[3] also demonstrated that sodium fluoride in solutions of low concentration reacted with powdered bone, displacing phosphate ions in proportion to the concentrations employed.

The Presence of Bone Determines Completion of Reaction—It is obvious from the findings described that calcium fluoride (the end-product of interaction between a calcium salt and a soluble fluoride) being withdrawn from the sphere of action by bone, the equivalent of precipitation allows the reaction cited to proceed to completion.

Completion May Occur in Tissues of Body—The biochemical reaction demonstrated may proceed progressively to completion in the fluids and tissues of the body, especially in the vicinity of bone where calcium fluoride is withdrawn and retained and where calcium fluoride is certainly much less soluble than in distilled water.

Circumstantial Evidence

Concentration in Tea—In Britain, one of the largest tea-drinking countries, an analysis of several brands of tea reveals the fact that fluorine in tea is being consumed at the rate of 0.96-1.54 p.p.m. in areas where the water supply contains a negligible amount of fluorine with no sign of mottling whatsoever in these areas.[4] If the water were to contain 1 p.p.m., the element fluorine would be im-

[1]Dillon, Charles: Dent. Mag., Lond. **67**:409, 1950.

[2]Smith, H. V., and Smith, M. D., Waterworks Engineering (Nov.) 1937.

[3]Dillon, Charles: Dent. Practit. **3**:79, 1952a.
[4]Dillon, Charles, Dent. Practit. **3**:374, 1953.

bibed at the rate of 1.96-2.54 p.p.m.

(Incidentally, those who would fluoridate our water supplies declare with emphasis that their intention is to raise the concentration in the water supply only to a level of 1 p.p.m. fluorine which it is claimed will be compatible with good general health.)

Concentration in Soup—If soup is made from the bones of cattle or sheep, consumption of fluorine in such soup may be made at the rate of approximately 3.6-4.6 p.p.m. in areas low in fluorine,[5] and an amount ranging from 1.8 milligrams to 2.3 milligrams fluorine would be imbibed with every 500 milliliters of such soup.

In this situation there would be no sign of mottling in areas low in fluorine and no indication whatever that such consumption of fluorine in tea or in soup has any influence over the rate and course of dental caries in such areas, provided water containing a calcium-reactable fluoride is not imbibed concurrently with the soup or tea.

Conversion of Calicum-reactable Fluoride by Metabolic Process—In the biochemical process a calcium-reactable fluoride which has passed through the metabolic processes of plant, fish, or animal, is converted (1) to inert calcium fluoride, or (2) to an organic fluoride that is noncalcium-reactable when it is consumed by man as food.

Control Inhibited—Because fluorides converted by metabolic processes have ceased to be enzyme poisons, they can no longer control dental caries or produce mottling of teeth. But if manufacturers are forced to use fluorinated water in the preparation of food, the consequences of the incorporation of a calcium-reactable fluoride may be that mottling of teeth from food will become a new feature of modern life.

Fundamental Difference in Chemical Nature—Even the casual observer must suspect from the preceding information that there must be some fundamental difference in the chemical nature of the fluorides that are imbibed in tea or soup as compared with the fluorides that are imbibed in water capable of mottling teeth.

"Natural" Water Supply

Water supplies containing undesirable amounts of fluorides are in nearly every case derived from Artesian wells or bore-holes; it is doubtful whether this type of water supply can be described as natural. Water that has not passed over a bed of vegetation or that is not inhabited by fish and aquatic animals should not be described as natural. River water seldom contains over 0.3 p.p.m. fluorine; it may well be that the aquatic population in this case absorbs and retains the element fluorine and so renders the water pure to drink. This matter is now under investigation.

Toxic Content of "Natural" Water Supplies—From examination of "natural" water supplies capable of mottling teeth it has been shown that only a fraction of the total fluorine is responsible for the mottling. This amount is a calcium-reactable fraction that went into solution originally as a calcium-reactable salt (that is, a fluorine salt other than calcium fluoride which may also be present).

Variation in Toxic Fraction—A method of separating this toxic fraction has been evolved.[4,6] The toxic fraction varies with the water supply: (1) A water supply with a total fluorine content of 2.6 p.p.m. may contain a toxic fraction of 0.39 p.p.m., and (2) a water supply containing 0.73 p.p.m. may contain as much as 0.33 p.p.m. toxic fraction.

A toxic fraction as low as 0.16 p.p.m. has been observed to produce obvious mottling followed in time by degenerative changes in the pulp chamber.

Artificial Fluoridation

It is now proposed to add 1 p.p.m. fluorine in the form of sodium fluoride or sodium silico-fluoride to water supplies. Both of these fluorine salts are capable of reacting with any calcium salt.

Scientific Investigation Limited in this Subject—(1) Because the proposed concentration of fluorine is below the level of 8 p.p.m., and because calcium fluoride is soluble to the extent of 16 p.p.m. in water, no reaction will occur between the added fluorine salt and the calcium in *the water supply*; (2) all the salts in the water will be as in an ionized state, and (3) any interchange of molecules that will take place will be reversible. This is as far as our scientific advisers have taken the matter; therefore, they are "sure" that no chemical reaction will occur in the human body between added fluorine salts and the circulating calcium.

Biochemistry of Fluorides Ignored—In a reckless attempt to fluoridate the water supplies of the world the biochemistry of fluorides has been completely ignored.

Structural Damage to Tissues will be Progressive—It has been pointed out that in the presence of bone which is capable of adsorbing and retaining calcium fluoride (the end-product of interaction between a calcium salt and any soluble fluoride) a reaction will in fact take place in the human body; as long as such water is drunk the reaction described will be continuous at all levels of concentration and the structural damage to the tissues will be progressive.

Mottling of Teeth

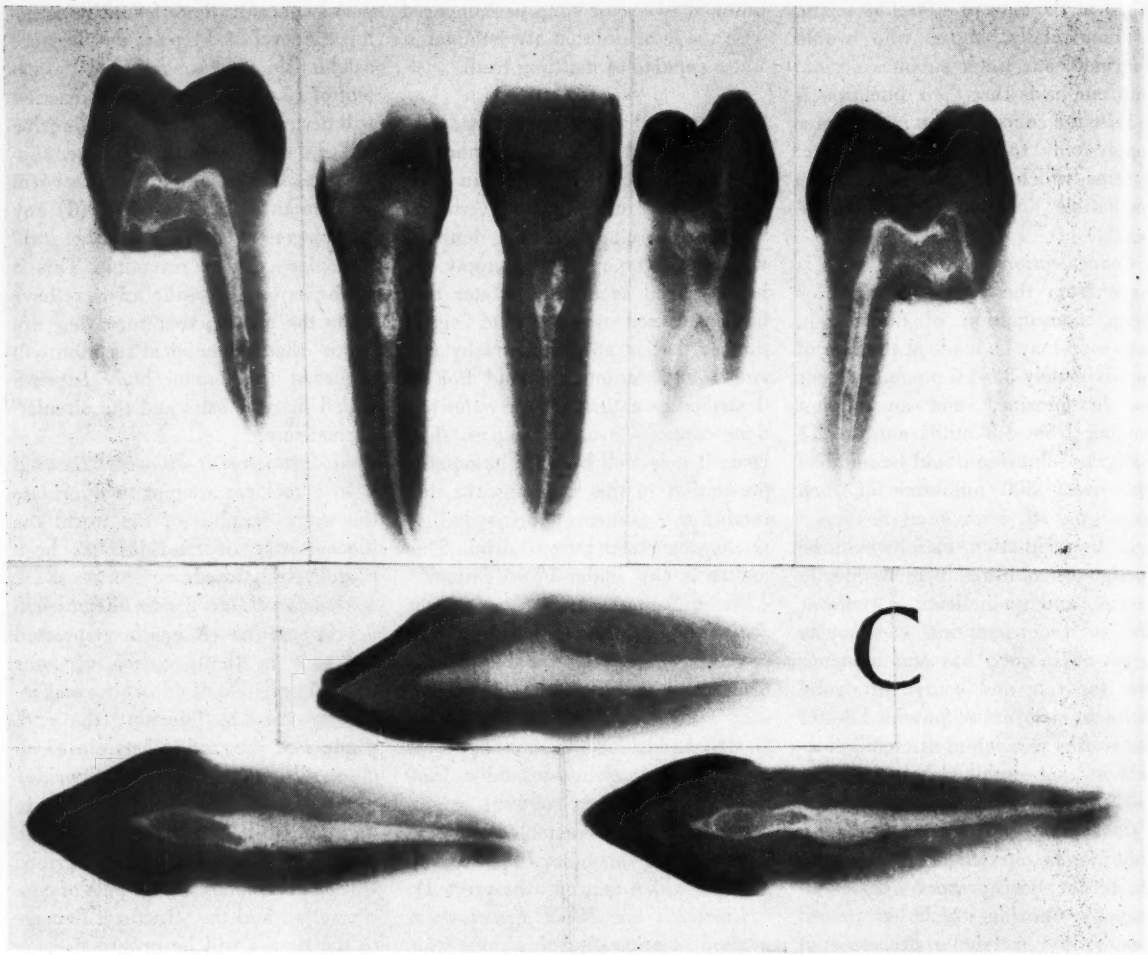
After thirty years of research public health authorities inform the public that mottling of teeth is but a slight disfigurement, merely an insignificant scar, a small penalty to pay for the great benefits they claim will accrue.

Indication of Pathologic Change—The fact is that the mottling which is seen on the finished crown of the erupted tooth is only an indication of a generalized fundamental pathologic change which is progressive. It is conceded that mottling of teeth is due to a toxic interference of the vital elements taking part in the formation of teeth. Why should the process cease the moment the teeth are erupted?

Degeneration Followed by Calcification—It has been demonstrated that mottling is progressive and that the continual imbibition of calcium-re-

[5]Dillon, Charles: Dent. Mag., London **70**:292, 1953

[6]Dillon, Charles: Dent. Practit. **3**:101, 1952b.



1. ***Teeth from West Hartlepool, England. The typical change in the pulp tissues which occurs in all areas with fluoridated water. Seven teeth from a patient only 28 years of age, and a control (marked C) of a man of 46 are illustrated. All the teeth of the subject were sound; the coronal mottling may be described as medium.***

Examine the two cuspids lying horizontally below the control and note that the calcific plug is ragged in appearance, roughly the same shape, and situated in precisely the same position of the pulp chamber. It may be concluded, therefore, that (a) the pathologic change is related to an exact period of time, and (b) since it is ragged in appearance the progressive nature of the degeneration of the pulpal tissues is suggested.

Examine the two molars. Note again that the shape of the calcific plug is similar, and in addition, note the thin line of calcific deposit running down to the apex, showing that the toxic matter is being brought to the pulp chamber by the blood vessels which themselves appear to be undergoing degenerative changes followed by calcification.

The total fluorine content of the water in West Hartlepool is 2.6 p.p.m. but the calcium-reactable fraction actually responsible for the mottling and the degenerative changes was found to be 0.39 p.p.m.

(Reproduced by courtesy of *The Dental Practitioner* Volume 3, page 370, 1953.)

actable fluorides in drinking waters results in a progressive degeneration followed by calcification of the contents of the pulp chamber. Figure 1 illustrates such a typical progressive change.

Degenerative Changes Revealed—In Figure 1 seven teeth are shown of a patient of 28, and one of a control, aged 46, designated as C. All the subject's teeth were sound. The coronal mottling may be described as medium. The degenerative pulpal changes in the teeth in the top and bottom rows as compared with the control, C, are significant.

Specific Conditions—Examine the two cuspids lying horizontally below the control and note that the calcific plug is (1) ragged in appearance, (2) is roughly the same shape, and (3) is situated in precisely the same position of the pulp chamber. It may be concluded, therefore, that (a) the

pathologic change is related to an exact period of time, and (b) since it is ragged in appearance, the progressive nature of the degeneration of the pulpal tissues is suggested.

Other Similarities—Examine the two molars shown in the illustration. Note again that the shape of the calcific plug is similar, and in addition note the thin line of calcific deposit running down to the apex, showing that the toxic matter is being brought to the pulp chamber by the blood vessels which appear themselves to be undergoing degenerative changes followed by calcification.

Fluorine Content Imbibed—The total fluorine content of the water in West Hartlepool imbibed by the patient whose teeth are studied is 2.6 p.p.m. *but the calcium-reactable fraction actually responsible for the mottling* and the degenerative changes was found to be 0.39 p.p.m.

Typical Change in Pulp Tissue Progressive

There is no reason why the process of progressive degeneration described should stop at any stage so long as water is drunk from such a causative source. The process must, on the contrary, inevitably continue to a progressive pathologic aging of bone with resultant calcific changes in (1) the jaw and alveolar processes, (2) the attachment apparatus, and (3) the arteries and arterioles supplying these areas.

Penalty for Percentage Reduction in Juvenile Caries—Periodontal disease will occur prematurely and a widespread loss of teeth at an early age will be the penalty for a percentage reduction in juvenile caries.

Incidence of Periodontal Disease Increased—Clinical experience of factory workers exposed to industrial fluorine confirms a loss of trabecular pattern in the bones of the jaw and a general increased density in the alveolar processes. The incidence of periodontal disease and the severity of such conditions rise with each year of exposure.

Industrial Hazard—Although the situation described may be accepted as a normal industrial hazard, there is no justification for subjecting children to factory conditions as soon as they are born. The introduction of fluorine in water will shorten the industrial life of workers where fluorine is already a hazard.

Occurrence of Hemiplegia—Cases of hemiplegia have occurred with suspicious frequency at an early age among workers engaged in industry who are exposed to fluorine; this aspect of fluorine intoxication cannot be ignored.

Physiologic Considerations

(1) If the marrow spaces of bone are to be progressively blocked by calcific substance, and (2) if the arterioles are to be progressively calcified in these areas, it is obvious that the blood pressure of persons drinking continually a calcium-reactable fluoride will progressively rise.

Blood Pressure may be Affected—It is an established physiologic fact that if peripheral pressure is increased, other factors remaining constant, the blood pressure will rise automatically.

Possible Heart Disease—The claim that heart disease is more common in areas where there is fluorine in the water bears further investigation.

Possibility of Degenerative Change

Detoxifying Function

Mottling of teeth will certainly occur where the water supply contains soluble and therefore reactable fluorides.

Bone appears to be the detoxifying center for toxic or soluble fluorides or calcium-reactable, enzyme-inhibiting, or tissue-destroying fluorides. This suggests a reason why deciduous teeth are seldom mottled. The explanation might be that the bony structure of the mother first detoxifies or reacts with the soluble fluorides before they can reach the placenta by a process of diffusion. Should the mother tissue be confronted with such a concentration of soluble fluorides that it is incapable of detoxifying them entirely, the possibility exists that the soluble fluorides may diffuse through to the fetus and influence its destiny. As there has been as yet no purposeful investigation into this matter, however, a scientific statement on this question must await further investigation.

The Pathological Significance of Mottled Teeth, From *Dental Practitioner* **3**:No. 12, 366-375 (August) 1953.

Retention of Fluorine

It is a fair estimate to state that the average weight of the deciduous and permanent dentition together will be about 100 grams. This means that the dentition alone of a child of say 14 years will have absorbed and retained in a non-fluorine-in-water area approximately 29-40 milligrams of fluorine; or say 60-80 milligrams of calcium fluoride. In a fluorine-in-water area the amount retained will lie between 39 and 92 milligrams of fluorine, or 80-109 milligrams of calcium fluoride. When we take into account the amount retained in skeletal bone (which continues to grow and develop up to the age of 25) and that amount retained in the soft tissues of the body (liver, spleen, kidneys, brain tissue, muscles, and tendons) it will be appreciated that the retention of fluorine in the body is beyond the meaning of the term "trace element." It is in fact a substantial amount. The amounts retained bear a direct relationship to the amounts ingested. It can be demonstrated that the process of absorption and retention is progressive and that fluorine is stored at the expense of the vital elements of teeth and bone.

The Pathological Significance of Mottled Teeth, From *Dental Practitioner* **3**:No. 12, 366-375 (August) 1953.

in other Tissues—It has been demonstrated radiographically that the pulp chamber may become progressively blocked in areas where there is fluorine in the water supply. The brain tissues are enclosed in an orb of bone; the constant imbibition of calcium-reactable fluorine in water may affect the tissues nearest the cranial bones.

Prognosis and Diagnosis

In our present-day civilization the degenerative diseases are the major causes of increased morbidity and mortality. Society can ill afford to reduce the incidence of dental caries in children at the expense of an increase in the rate of the degenerative diseases in the adult.

Fluorine has been consumed at an increasing rate over the past fifty years. The change in disease pattern over that period has not been explained by medical science.

To arrive at a decision concerning the etiology of any disease the only scientific approach is to eliminate all factors known or suspected. The salutary lessons of the past show that the results of this approach are always surprising.

On the important issue of fluoridation, however, prognosis seems to have taken precedence over diagnosis.

Caladh, Fort William
Inverness-Shire, Scotland

Mottling

Mottling, so it is believed after thirty-odd years of superficial study, is caused by excess of fluorine ions in drinking water. A concentration of fluorine over 1 p.p.m. is associated with undesirable mottling. Mild mottling, it is stated, appears as pearly-white markings of permanent teeth. It is further stated that this is the first sign of fluorine intoxication and therefore can be used as a reliable guide in controlling the amount of fluorine that the public must drink in order to safeguard them from the ravages of dental caries. These statements take no account of the fundamental cause of mottling.

The author has shown that mottling of teeth bears no exact relation to the total fluorine content of the water supply but is related only to the calcium-reactable, or enzyme-inhibiting, or tissue-destroying, or poisonous fraction of fluorine in the drinking water. A method of separating this fraction was described.

A tooth is a highly specialized organ and is developed by a highly specialized tissue: the tooth germ. The mottling which is observed in the finished structure is a failure of the enamel-forming organ and ameloblasts to lay down the inorganic elements perfectly and without blemish in the presence of toxic fluorine circulating within these structures.

The mildest form of mottling observable has the same pathologic significance as the grossest form.

The cellular elements, in the face of tissue-destroying fluorine circulating in the blood-stream, undergo degeneration and become incapable of fashioning perfectly the inorganic elements of enamel, dentine, and cementum. As the bony framework is fashioned by a similar physiologic process, it follows that any similar toxic disturbance taking part during the fashioning of skeletal bone will have a similar effect.

The wonderful ability of vital tissue to carry out its function despite difficulties is well known, but it is sometimes forgotten that this wonderful mechanism has its limits of endurance. If the toxic fraction of fluorine is exceedingly small, the degeneration of the enamel-forming tissue progresses more slowly and white markings below Nasmyth's membrane are seen. If the toxic fraction of fluorine is greater, the cellular elements degenerate faster and mottling may appear more superficially on the surface of the crown. When finally the last layers of the enamel organ are affected, the result is gross deformity.

This is what can be seen, but our advisers should have made it their duty to inquire into the things that are not so easily seen. Mottling, it is emphasized, is an insignificant scar, merely a slight disfigurement to be paid for the great benefits claimed.

That this is not so is evident from a study of the physiologic and pathologic principles involved. It cannot be denied that mottling is a failure of the cellular elements due to toxic degeneration of the vital tissues taking part in the fashioning of the tooth. Therefore it is unworthy of scientific men to assume that the process will abruptly cease the moment the teeth are erupted and that the toxic degeneration involving the tissues taking part in the fashioning of the tooth (which was the immediate determining cause of the mottling) should limit itself only to these tissues and then abruptly cease.

The Pathological Significance of Mottled Teeth. From *Dental Practitioner* **3**:No. 12, 366-375 (August) 1953.

Difference in Obligation of General Practitioner and Specialist

The general practitioner needs only to meet the standard of average medical or dental care provided in the community in which he is practicing, or in similar communities by other general practitioners. The specialist must conform to the treatment accepted as a standard throughout the country by physicians practicing the particular speciality concerned. Any physician or dentist can, so far as the law is concerned, practice as a specialist regardless of the extent of his training and knowledge. By doing so, he must bring to the care of his patient "that degree of skill and knowledge which ordinarily is possessed by physicians who devote special attention and study to the disease, its diagnosis and treatment; having regard to the present state of scientific knowledge." In other words, *the specialist assumes the risk of the designation in return for its rewards.*

From *Medical Clinics of North America* **37**:No. 5, 1567 (September) 1953.

BODY CHEMISTRY

in Health and Disease -- Part Three

MELVIN E. PAGE, D.D.S.,
and D. L. BROOKS, A.B., St. Petersburg, Florida

DIGEST

The first installment in this series of articles showed the correlation between the following factors: (1) diet and calcium-phosphorus blood levels; (2) calcium-phosphorus blood levels and types of dental disease; and (3) the relationship between types of dental disease and body types. The second installment discussed anatomic relationships and demonstrated the technique used in obtaining body measurements. This, the third installment, analyzes the correlations between graphed measurements of body types and glandular activity. Based on the validity of the endocrine interpretation of the graphed anthropometric measurements, treatment for the correction of calcium-phosphorus imbalance employing endocrine supplementation and dictated by the graph interpretations shown, provides a means for approaching systemic causes of oral disease. In succeeding installments case histories illustrating this principle and additional analyses of graph interpretations will be presented.

Procedure in Plotting Graph

The method employed in plotting the graph which reveals the patient's endocrine configurations, includes the following steps:

1. Use either especially prepared charts or 3 x 5 ruled cards. The horizontal lines must be 2/8 inch apart. Across these horizontal lines draw five vertical lines 7/8 inch apart (Fig. 20).

2. Mark the vertical lines A, B, C, D, E, in order across the card.

3. Beginning at the third horizontal line, *from the top,* mark it at the left side, 1.600, the next horizontal line below, 1.500, the next 1.400, and the next 1.300.

4. Leave two lines unmarked.

5. The ninth line down should be marked 1.500, the tenth 1.400, the eleventh 1.300, the twelfth 1.200 (Fig. 20).

Right Side of Graph—1. Estimate, mentally and visually, ten points between 1.600 and 1.500 (Fig. 20) and between each of the other lines.

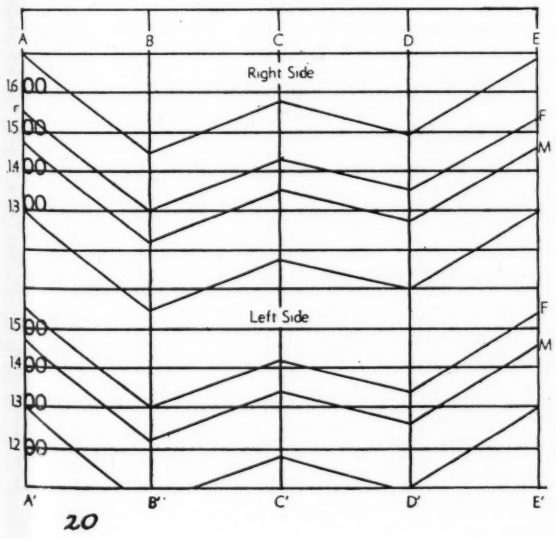
2. Take Quotient A from the right side of the measurements (see Figure 18, second installment, October 1953), and plot with a dot on vertical line "A" in the upper half of the chart (Fig. 21).

3. Place Quotient B on vertical line "B," Quotient C on vertical line "C," Quotient D on vertical line "D," and Quotient E on vertical line "E."

4. Connect the dots.

Left Side of Chart—Repeat the

20 *and* **21.** *Charts used in graphing endocrine configurations.*



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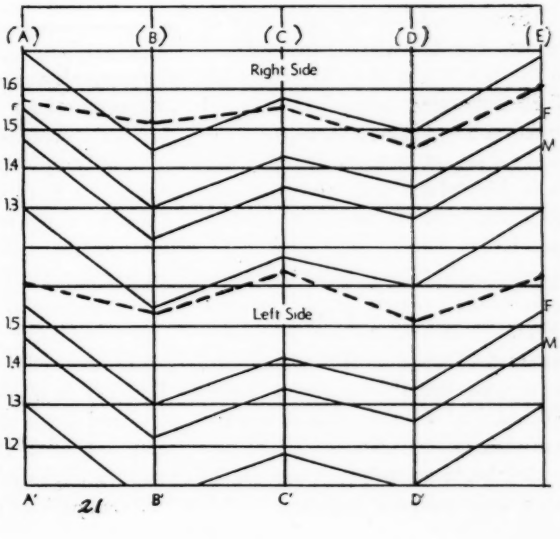

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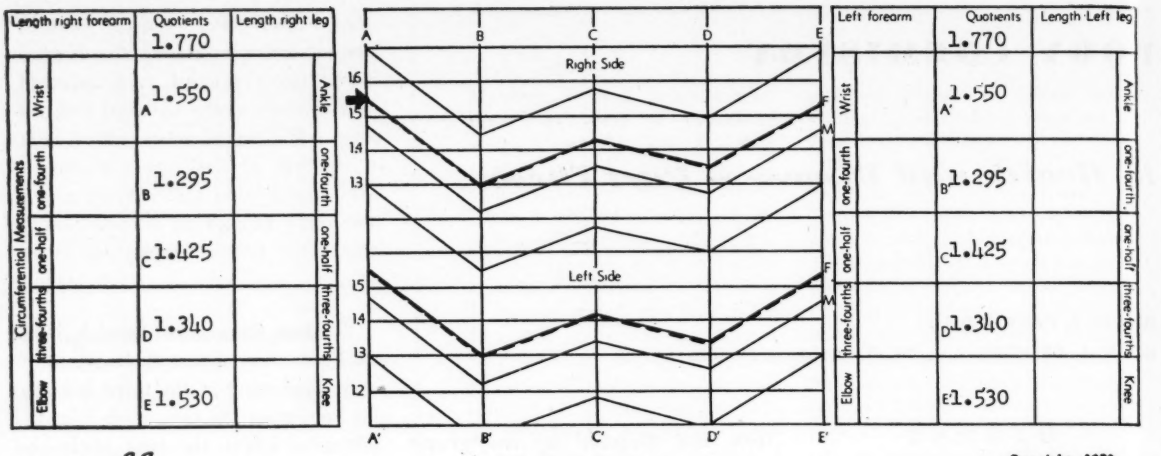
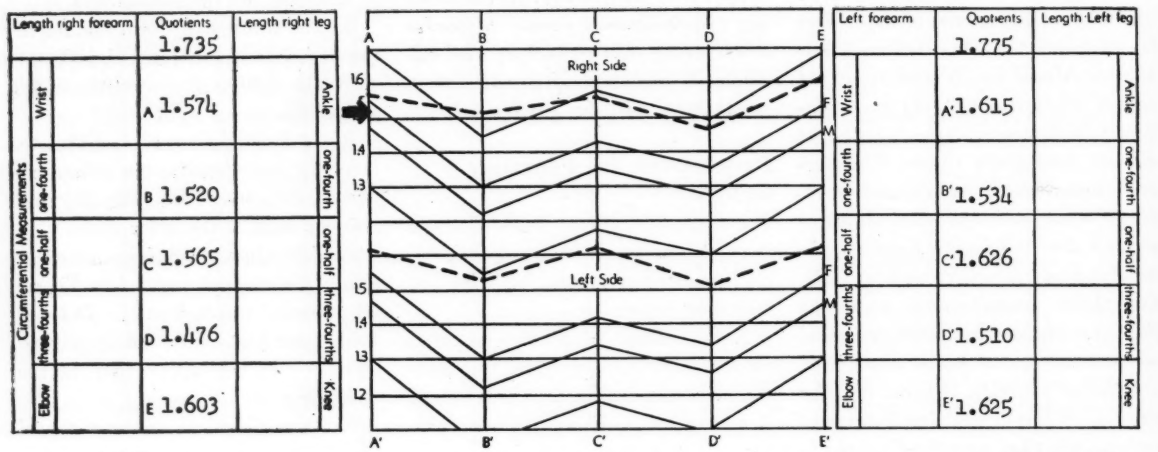




method used for the right side of the graph but use the lower half of the chart.

(Some quotients will fall above or below (Fig. 21) the figures marked at the side of the chart at the outset. For this reason, space has been allowed above, below, and between the two halves so that the graphs for both sides of the body can be made, no matter how far from normal they may be.)

Information Revealed by Interpretation—The three graphs shown (Figs. 23, 24, and 25) are obviously different. They can tell a story to those who learn to interpret them. The validity of interpretation can be confirmed if consistency is demonstrated between body shapes, graph types, and treatment response.

22. ***Graph of normal female.***

23. ***Graph of parasympathetic type.***

Comparison of Graphic Information

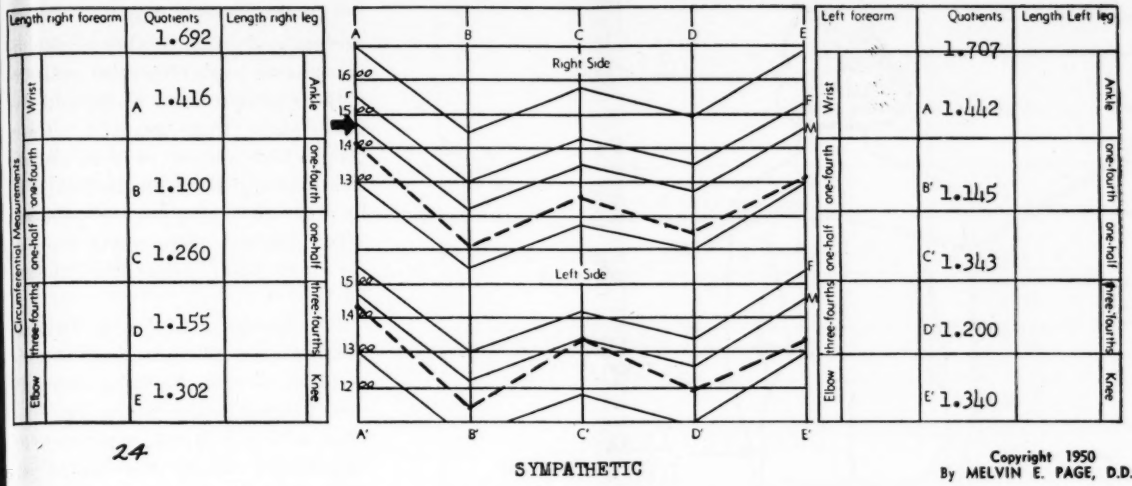
1. In a comparison of a parasympathetic graph (Fig. 23) and the graph of a normal figure (Fig. 22), it will be noted that all the dots and lines in the parasympathetic chart are *above* those for the normal, and that all the angles are more *obtuse*.

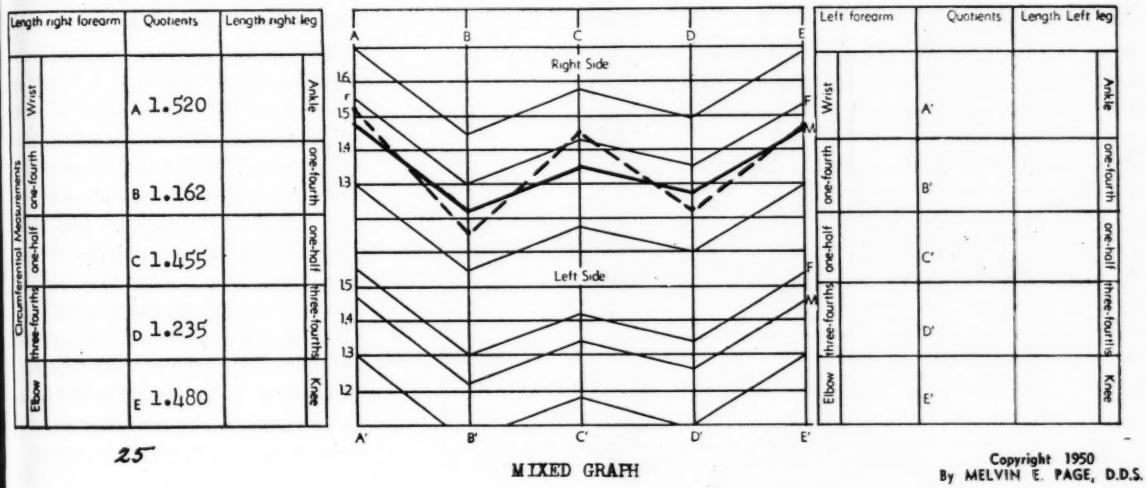
2. Comparing the sympathetic graph (Fig. 24) with the normal (Fig. 22) it is observed that all the dots and lines in the sympathetic chart fall *below* those in the normal while the angles are more *acute*.

3. Comparison of the mixed graph (Fig. 25) with the normal shows the first dots and lines falling below, the middle coming above, and the last again falling below. The first and third angles in this graph are more acute than in the normal, but the middle one is more obtuse.

Typical Weight Distribution—It has been stated that (1) the normal person has an even distribution of body weight, (2) the parasympathetic person has a predominance of weight below the waist, and (3) the sympathetic person has a predominance of weight above the waist.

Weight Distribution in Mixed Graph: The sympathetic measurements in the mixed graph were found at ankle, wrist, and the second circumferential measurement, also at the fourth circumferential measure-





ment: the elbow, the knee. All of these measurements were smaller than in the normal, indicating that there is less weight at these points.

Larger Numerical Figure: At the third circumferential measurement the numerical figure is larger than in the normal, indicating that there is more weight at this point. This particular mixed graph would represent a person with thin wrists and ankles, well-curved midleg and calf, and an inward curve at knee and elbow. These measurements would be reflected in the rest of the body-build as well.

Weight Alteration in Age: In the mixed graph referred to, there would be characteristically a little dip under the chin and a double dip on each hip (Figs. 26A and 26B). In youth this figure would be pleasing but with increasing age there would be a tendency for weight to gather on the hips and about the waist.

24. ***Sympathetic graph.***

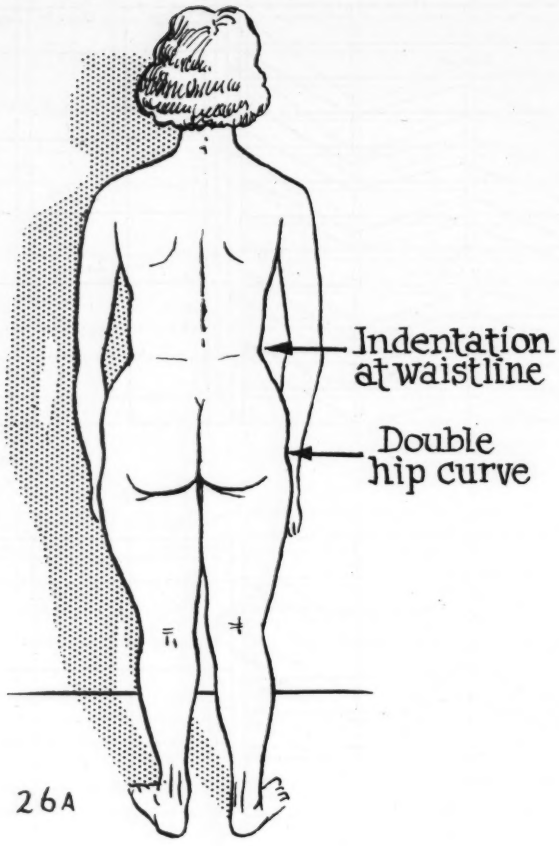
25. ***Mixed graph.***

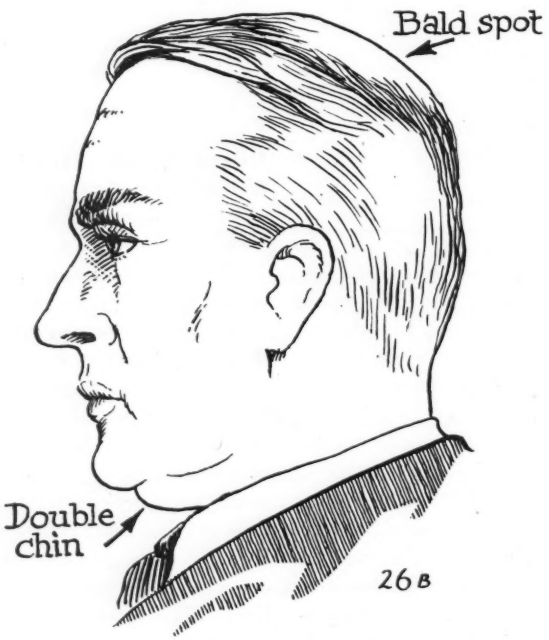
Correlation of Body and Graph Types with Nature of Deficiency—Measurements on thousands of patients have verified the correlation of the graph types to the body types described. Having demonstrated this consistency it is logical that reading the graphed measurements (relative proportions) must be valuable provided a correlation between the graph reading and the type of deficiency in the body chemistry can be correlated.

Observations Recorded on Glandular Activity

In practice the following were noted:

(1) *Favorable Response to Thyroid Extract Therapy*—Most patients taking thyroid on prescription from their physicians were people with heavy ankles. Experience had shown that in *some people* minute doses of thyroid extract improved calcium-phosphorus blood ratios. Measurements on a series of these patients were graphed and compared. All had higher figures for the second circumferential measurement (the B B′ line). When graphed, this produced a higher position for individual measurements on the graph than the normal.





26A *and* **26B.** *Showing body configurations in persons represented in mixed graph.*

(2) *Unfavorable Response*—Measurements of patients whose calcium-phosphorus levels responded unfavorably to minute doses of thyroid extract were then graphed. These people had normal or thin ankles. This was registered on the line B B′ by a correspondingly lower quotient. When graphed, there was a drop in the first point below the normal angle.

(3) *Specific Function of Thyroid Gland Indicated*—If, as these investigations indicated, the ¼ leg measurement divided by the ¼ arm measurement indicated thyroid deficiency or superfluity, weight distribution at this point must be controlled by the thyroid gland. Subsequently, patients were treated on this basis. Results substantiated previous conclusions.

Improving Efficiency of Body Chemistry—The remainder of the graphed proportional measurements were worked out in the manner described until readings at various points definitely correlated with deficient activity or overactivity of specific glands. As a result, a measurement, or an "endocrine pattern" capable of interpretation based on glandular activity or inactivity is established. This is the key to treatment for increasing the efficiency of body chemistry.

Correlation of Graph Interpretation with Medication

Graph Showing Hypofunctioning Thyroid Gland—The solid line in Figure 27 shows the endocrine pattern of a normal person. The upper dotted line is a graph of a person with a hypofunctioning thyroid. This type of patient shows improved calcium-phosphorus balance if given thyroid medication.

Hyperthyroid Graph—The dotted line falling below the solid (normal) line in this graph indicates that the patient from whom these measurements were taken was a hyperthyroid subject. This type of patient shows an increased imbalance of calcium and phosphorus levels if given thyroid medication.

Hypofunctioning Posterior Pitui-

tary—In Figure 28 the solid line shows the endocrine pattern based on normal measurements. The dotted line falling above the normal is indicative of a hypoposterior pituitary. Small amounts of posterior pituitary substance would have a beneficial effect on the calcium-phosphorus balance of a person whose measurements produced a graph of this type.

Hyperposterior Pituitary Function—The dotted line in Figure 28 falling below the solid normal is indicative of hyperposterior pituitary function. The use of posterior pituitary substance in this case would increase the calcium-phosphorus blood imbalance.

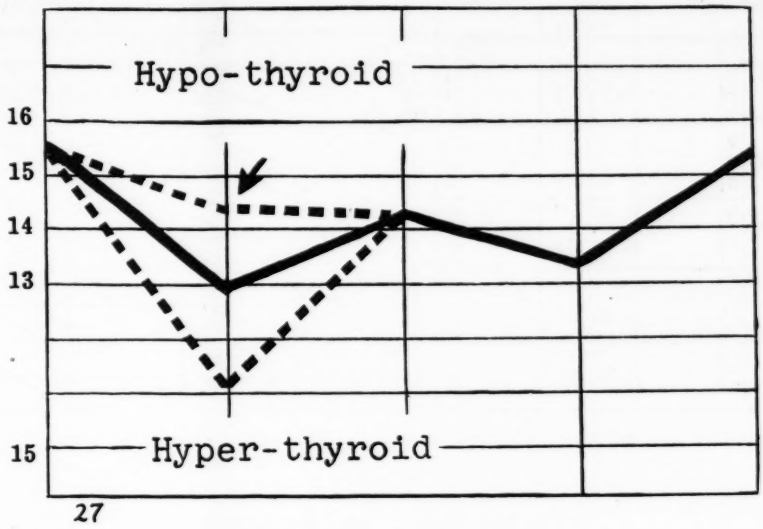
Graph of Patient with Hypofunctioning Anterior Pituitary Gland—In Figure 29 the solid line again shows the endocrine pattern of a normal person. The dotted line appearing above the normal line results from measurements taken on a patient with a hypofunctioning anterior pituitary. Anterior pituitary substance, if given to a person of this type, would improve the calcium-phosphorus balance.

Hyperfunctioning Anterior Pituitary—The dotted line dropping below the solid normal line in Figure 29 is representative of the measurements taken from a hyperfunctioning anterior pituitary person. If anterior pituitary substance were given to this type of patient, the calcium-phosphorus blood imbalance would be increased.

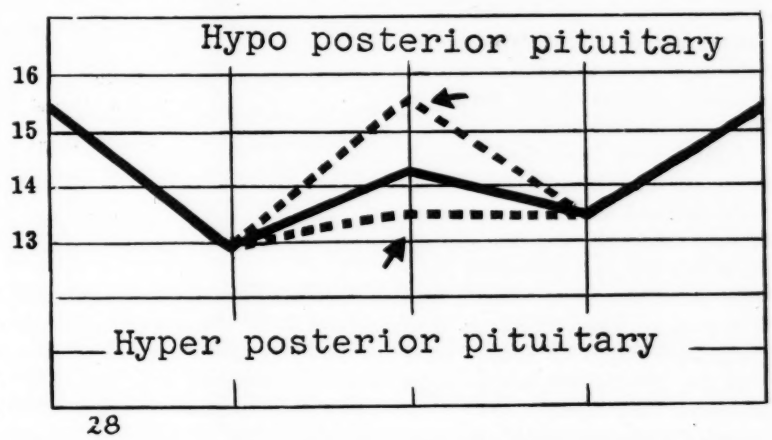
Full Potentialities of Interpretation Unrealized—The meaning of the first and last points on the graph (the A A′ and the E E′ lines) is still not known for certain. The impression is that these lines indicate the degrees of innate and acquired andricity and gynicity.

Measurement Tests Applicable to Either Sex

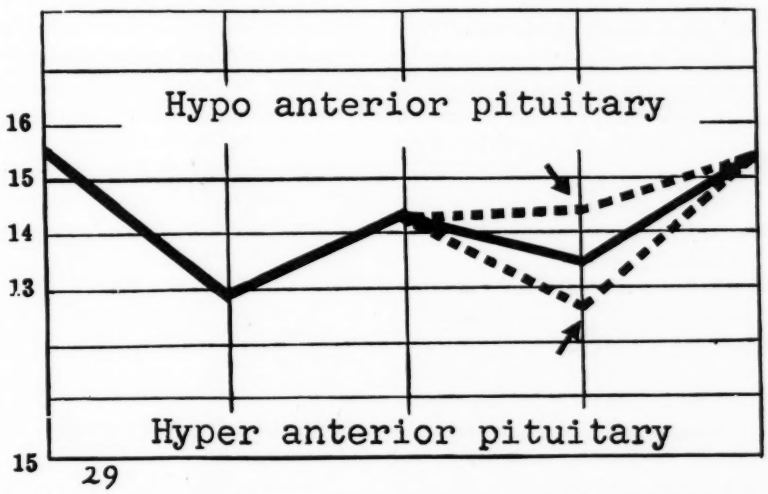
Men and women are glandularly and anatomically different; it was not known for some years whether the graph interpretations would be equally applicable to both. The first studies were on women. Time and experience, however, revealed that in the main the same measurement tests



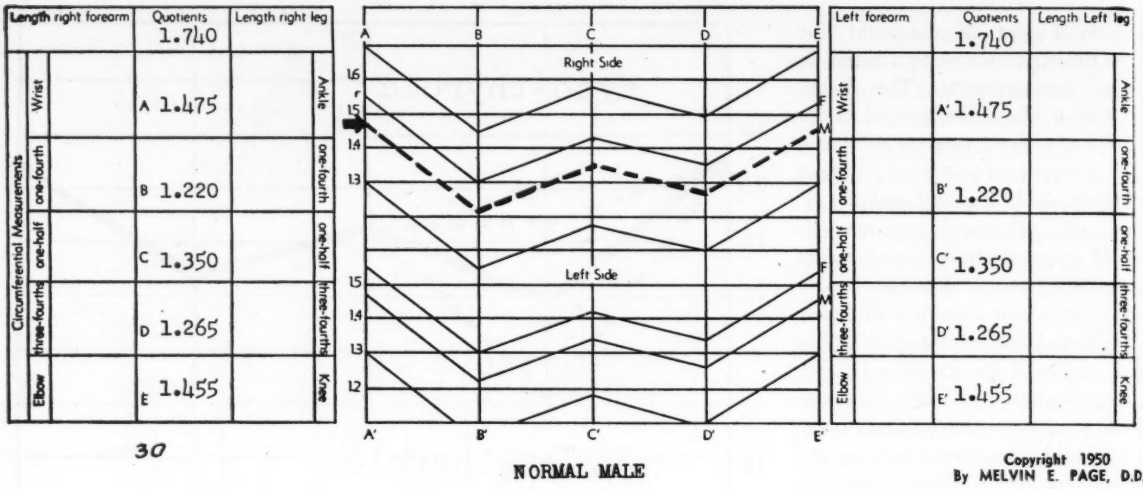
27. ***Chart showing hypothyroid and hyperthyroid type.***



28. ***Chart showing hypofunctioning and hyperfunctioning posterior pituitary gland.***



29. ***Graph of patient with hypofunctioning and hyperfunctioning anterior pituitary gland.***



could be used for either sex. However, as more was gradually learned about the use of the sex hormones for the purpose of achieving proper calcium-phosphorus ratios a new assumption was attained for the importance of body balances.

Influence of Sex Hormones—It is known that both sexes produce both male and female sex hormones. It was reasonable, therefore, to assume that men would produce more male hormones than women, and women more female hormones than men. This arbitrarily should influence the body measurements as it influences body build.

Male Graphs Set Lower—By plotting, averaging, and correlating hundreds of male graphs, as contrasted to female graphs, it was learned that the graph itself did not differ from male to female, but the *placing* of graphs on the measurement chart did vary between the sexes. Determination of hyper or hypoactivity of the individual glands could be determined by the same means for both sexes, but the male graphs had to be set lower.

Choice of Terminology—In biologic terminology the word andric is used for a male and gynic for a female, these terms were therefore adopted to indicate graph placements.

Divergence from Average—Although the average male graph and the average female graph fell at a certain point, there were individual graphs which fell outside these normal areas. When this occurs it is considered to be indicative of excessive andricity or gynicity for a given person of a particular sex. This divergence from normal, like the other anthropometric divergencies, should indicate glandular activity and dictate the means for its correction.

30. ***Endocrine pattern of normal male.***

Urinary Steroid Excretion
(After Hoskins and Pincus)[1]

	Normal Females	Normal Males
TOTAL	*Mean*	*Mean*
Estrogens R.U./24 hrs.	26.79	12.61
Androgens mg./hr.	0.068	0.181

Type of Correction Dictated by Divergence—By the use of male (testosterone) and female (estrogen) hormones, that the divergence from normal should indicate correction was found to be true to the extent that the calcium-phosphorus blood ratio could be improved. Therefore, the average normal graph figures for a female are now set at: 1.550, 1.275, 1.425, 1.340, 1.530 (Fig. 22). The average normal graph figures for the male are: 1.475, 1.220, 1.350, 1.265, 1.455 (Fig. 30).

Principle in Hormonal Therapy

Problem of Andricity and Gynicity—Study has continued for five years to find a method which would ensure as great a degree of accuracy in these determinations as in those of the other glands. *Body proportions* and *weights* vary considerably; it must also be recognized that there are variations in *body length*. The torso usually develops most rapidly before puberty and leg length after puberty. The length of the forearm and leg is measured and the relative proportions are computed in order to take this factor into account.

Method of Determination—The present method used for determining andricity and gynicity is the following:

1. The normal figure obtained by dividing the length of the leg by the length of the arm should be 1.770 (recently revised) for a woman. The average normal figure obtained by dividing the ankle measurement by the wrist measurement for a woman should be 1.550.

2. When the figure obtained by dividing the length of the leg by the length of the arm is more than the normal of 1.770, the difference should be added to the average normal 1.550.

3. If the figure obtained by dividing the length of the leg by the length of the arm is less than the normal of 1.770, the difference should be subtracted from the average normal 1.550. At the figure thus obtained, place an arrow.

4. The arrow indicating gynicity or andricity may or may not coincide

with the starting point of the graph. If the individual graph has a starting point *above the arrow,* that person is treated glandularly as gynic, regardless of sex. If the individual graph has a starting point *below the arrow,* the patient is treated glandularly as andric, regardless of sex.

Method Illustrated—Refer to the original figures for the parasympathetic graph (Fig. 23). Note that the quotient for this woman, obtained by dividing the length of the right leg by the length of the right arm, is 1.735. This figure should read a normal 1.770. To the extent that it does not the arrow must be adjusted for andric-gynic determination.

Additional Steps—1. The actual quotient for this patient, obtained from dividing the length of the leg by the length of the arm, is less than the normal. Therefore *subtract* 1.735 from the normal 1.770. The answer is 35.

2. Deduct this from 1.550 (the normal figure that should be obtained in dividing the ankle measurement by the wrist measurement). The answer is 1.515.

3. Place an arrow on the chart at 1.515.

Result—Note the difference between the arrow indication and the patient's own starting point. The starting point of this graph is above the arrow, 1.515, therefore this patient is gynic. The calcium-phosphorus blood levels of this patient should respond favorably to minute amounts of testosterone.

Process Applied on Sympathetic Graph—1. In Figure 24 the quotient obtained from dividing the length of the right leg by the length of the right arm was 1.692. It should be 1.770.

2. Subtract 1.692 from 1.770. The result is 78.

3. Subtract this from 1.550. The result is 1.472.

4. Place an arrow at this point on the chart.

5. The graph starts at 1.416 which is below the adjusted andric-gynic arrow 1.472; therefore, this patient is andric. The calcium-phosphorus levels of this patient should respond favorably to minute amounts of estrogen.

Endocrine Substance Administered in Minute Quantities—Although both of the patients discussed are women, the anthropometric measurements indicate that one is a gynic woman, requiring the male sex hormone (testosterone) while the other is an andric woman, requiring female sex hormone (estrogen) to improve the efficiency of body chemistry. All the hormones or endocrine substances used in this technique are minute in quantity, much smaller in strength than those used by the medical profession for gross glandular disorders.

Andric-gynic Determinations in Men—The normal figure in men, obtained by dividing the length of the leg by the length of the arm, should be 1.740 (recently revised) and the quotient, obtained by dividing the ankle measurement by the wrist, should be 1.475. By using these figures as normals and subtracting or adding the variations between these and the subject's own figures, andric-gynic determinations can be secured.

Relative Accuracy of Andric-gynic Measurements—For the reason that andric-gynic arrows are correct 80 per cent of the time, factors other than the measurements for estimating a glandular correction in this regard must be correlated.

Personality Traits Serve as Guides: In general the following conditions will be observed: 1. A gynic tends to be dependent; an andric independent.

2. Gynics retain their hair with advancing years; andrics tend to lose their hair (at least on top of the head).

3. Gynics tend to be submissive; andrics aggressive.

4. Gynics tend to think in circles or jump to conclusions; andrics think directly and logically.

Relative Accuracy of Other Measurement Determinations: All the measurement determinations except the andric-gynic are from 95 to 98 per cent correct.

Extension of Interpretation

The next phase in this technique to be discussed will demonstrate the following relationships:

1. The relationship between abnormal endocrine patterns and calcium-phosphorus imbalance.

2. The relationship between glandular supplementation and calcium-phosphorus blood correction.

(*End of Part Three*)

2810 *First Street North.*

[1]Bodansky, M., and Bodansky, O.: Biochemistry of Disease, Ed. 2, New York, The Macmillan Company 1953, p. 1148.

Longevity and Nutrition

THE IMPORTANCE of good nutrition at all ages is pointed up by the high mortality from degenerative and metabolic diseases. These head the list of causes of death in the United States. The higher death rate found in overweight persons is significant, because abnormal deposition of fats is a common denominator in these degenerative diseases. Doctor Charles Glen King (Scientific Director, Nutrition Foundation; Professor of Chemistry, Columbia University) concludes: "One cannot attribute all of the top-ranking diseases to malnutrition as a sole cause, but nearly all research men do agree that nutrition plays an important, and often a dominant role, in all of them."

From Spectrum, *Journal of the American Medical Association* **152**:28 (June 27) 1953.

MANDIBULAR CYST

of Uncertain Origin: Report of a Case

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D I G E S T

The cyst of obscure origin discussed in this report occurs in the interproximal alveolus in the cuspid-bicuspid region. The adjacent permanent teeth are not associated with the cyst. Since the majority of cysts of the jaws are lined with stratified squamous epithelium, the pathologist, from a study of the material submitted to him, can afford but limited assistance in establishing the origin of such a cyst. Thorough clinical study including vitality tests and the use of satisfactory roentgenograms is frequently of more assistance.

In order that the most conservative surgical approach may be employed to prevent needless sacrifice of salvageable teeth in relation to the cystic cavity, it is important that the cause of such a cyst be ascertained. Several theories to account for the occurrence of such a cyst are presented herein.

Case Report

A twelve-year-old girl reported with a complaint referable to the cuspid-bicuspid region of the right mandible. There was no pain or swelling at this site but a draining fistula was noted on the buccal gingiva between the right mandibular cuspid and bicuspid. A serosanguineous fluid emitted from the fistula.

Past History—An intermittent drainage had occurred over a period of a few months prior to the present consultation. Prodromal symptoms of swelling and pain always antedated the periodic intervals of drainage from this site. The most recent episode was experienced by the patient two weeks prior to admission.

Roentgenographic Examination—Full mouth dental roentgenograms revealed a defect with well-circumscribed borders in the right mandible (Fig. 1). This defect, measuring approximately 3 centimeters in diameter, was situated between the mandibular right cuspid and the mandibular right first bicuspid teeth and was consistent with the appearance of an epithelium-lined cyst.

Roots Incline from Lesion—It was evident that the cystic-appearing lesion was causing the roots of the right first bicuspid, cuspid, and lateral incisor teeth to move away from the site of osseous cavitation. A mandibular occlusal roentgenogram of the region disclosed slight lateral expansion of the alveolar process and jaw.

Dental Conditions—1. Vitality tests indicated that the teeth in proximity to the cystic lesion were all vital. The possibility that this was a periodontal cyst associated with an adjacent tooth having a nonvital pulp was therefore ruled out.

2. No paresthesia was present in the right mandible or lip.

1. ***Dental roentgenogram revealing a radiolucent defect suggestive of a cyst located in the interproximal alveolus between the right mandibular cuspid and first bicuspid teeth. Note the manner in which the roots of the teeth adjacent to the cyst veer away from the site of the cyst, and the presence of retained deciduous root fragments in the cuspid-bicuspid region of the left mandibular alveolus.***

3. Despite the marked deviation of the roots of the right lateral incisor, cuspid, and bicuspid, as observed in the roentgenogram, the articulation of the teeth in this region was quite satisfactory.

4. A general physical examination revealed no significant abnormalities.

Surgery

1. The cyst, approached and examined through a 1-centimeter window created on the buccal gingiva, was observed to extend labially, lingually, inferiorly, and anteriorly to the right central incisor and right lateral incisor teeth.

2. The root of the cuspid was displaced labially as well as anteriorly.

3. The root of the right first bicuspid was inclined in a distal direction.

4. No mural thickenings were evident in the lining of the cyst.

5. A biopsy specimen taken from the wall of the lesion proved to be, on microscopic examination, a chronic inflammatory hemorrhagic fibrous-walled cyst lined with stratified squamous epithelium (Fig. 2).

6. It was decided not to strip away the cyst wall from the bone cavity because of the risk of devitalizing the adjacent teeth. Enucleation would also have exposed the root surface of the adjacent teeth which, it was believed, would have complicated postoperative healing.

Postoperative Measures

The patency of the window into the cyst which was created at the time of operation was maintained by the use of an acrylic plug obturator inserted into the defect for a distance of about 1 centimeter. This obturator was retained by clasps constructed on adjacent teeth.

Observation Continued—The patient was seen at specified intervals ranging from two to three weeks for the purpose of having the obturator reduced as granulation tissue filled in from the wall of the cystic cavity. In three months the defect was completely filled with granulation tissue, making discard of the obturator possible.

Regeneration of Bone—Approximately one year after operation the bone in the region had completely regenerated.

2. ***Cyst wall lined with stratified squamous epithelium. The fibrous connective-tissue wall is infiltrated with lymphocytes and plasma cells, and there is evidence of hemorrhage (hematoxylin and eosin; x100).***

Comments

While cysts such as the one reported here are uncommon, attention has been called to similar cysts whose location was in the interproximal alveolus in the cuspid-bicuspid region but whose origin could not be established with certainty. The following are investigators who have been interested in cysts of this type:

1. Blum[1] described an epithelium-lined cyst of obscure origin which was situated between a mandibular right cuspid and a mandibular right first bicuspid tooth. The boundaries of this cyst did not involve the roots of the approximating teeth.

2. Stafne[2] has expressed the opinion that the cysts which develop independent of the permanent teeth in this region are probably related to the epithelial débris of malassez and are associated with retained root fragments of deciduous molars.

3. Robinson[3] recognized the possibility that cysts might develop from the epithelial remnants of the sheath of Hertwig found in the periodontal membrane associated with retained deciduous teeth and roots. He observed that cysts may develop years after the loss of the deciduous teeth. He regarded these as periodontal cysts.

4. Attention was called by Orban[4] to the fact that not every epithelial island in the jaw is a remainder of the sheath of Hertwig. He demonstrated epithelial islands in the interdental bony septum between the mandibular first and second bicuspids of a 50-year-old human being. Orban's conclusions were that these epithelial islands were remains of a supernumerary tooth germ which had not developed beyond the stage of the epithelial bud or that they were a residue of the dental lamina. The possibility was suggested that tumors and cysts could later develop from such epithelial islands.

Considerations of Possible Causes of Condition

1. In the case reported in this article there were retained deciduous root fragments in the cuspid-bicuspid region of the left side of the mandible.

2. It is plausible to surmise that a retained deciduous root fragment may have been responsible for this

(*Continued on page* 502)

[1]Blum, Theodor: Do All Cysts in the Jaws Originate From the Dental System? (With a Report of Two Non-Dental Cysts Lined with Ciliated Columnar Epithelium.) JADA **16**:647-661 (Apr.) 1929.

[2]Stafne, E. C.: Possible Role of Retained Deciduous Roots in Etiology of Cysts of the Jaw, JADA & Dent. Cosmos **24**:1488-1493 (Sept.) 1937.

[3]Robinson, H. B. G.: Classification of Cysts of the Tooth Bearing Bones, (Abstr.) J. Dent. Research **23**:189 (June) 1944.

[4]Orban, Balint: Epithelial Rest in the Teeth and Their Supporting Structures, Proc. Am. A. Dent. Schools **5**:121-134, 1928.

LINGUAL *Metal Castings*

JACK SMOKLER, D.D.S., New York

DIGEST

Adequate stabilization and lack of bulk in a partial denture are of infinite importance in patient tolerance of the replacement. This article describes the step-by-step procedure for constructing a lower partial denture with a metal casting which extends onto the natural teeth and definitely increases stabilization, functional strength, and patient satisfaction.

Imperfect Stabilization

When a limited number of teeth are present in the anterior segment of the mandible, they may be so arranged that the use of the lingual bar and clasps, or clasps only, in a partial denture may be inadequate for stabilization and comfort. Reference is made to cases where the remaining teeth are situated in a unilateral, bilateral, or successive arrangement.

Unilateral Arrangement—In this arrangement clasps are usually the retaining elements and the lingual of the denture is processed in acrylic.

Bilateral Arrangement—When the abutments are located bilaterally, a ridge span exists between them and acrylic connects the saddles of the denture.

Successive Arrangement—In this arrangement, where the teeth *in situ* may include the cuspid on one side to the first or second incisor on the other, the use of the lingual bar and clasps may be uncomfortable and not hygienic.

Additional Space an Advantage—When the anterior lingual part of a lower partial denture is processed in acrylic, the appliance is necessarily cumbersome in order to provide strength and minimize breakage. This crowds the tongue, is a source of annoyance and discomfort to the patient, and may impair speech. Any additional space, therefore, that can be provided in this situation in prosthetic replacements will ensure greater freedom to the tongue during function and at rest.

Basic Factors in Procedure

Partial Restoration Preferred—Whenever feasible it is to the advantage of the patient to retain some mandibular teeth in the anterior part of the jaw for the use of a partial restoration as opposed to a full mandibular artificial denture. If the bony support of a few remaining teeth is adequate, it is advisable to try to preserve these teeth.

Knowledge of Occlusion Indispensable—A thorough understanding of the forces of occlusion is of importance in the construction of replacements. Referring to partial dentures and bridgework, Hemley[1] states:

"It becomes essential to plan the restoration in conformity with the maintenance of the health of the bone supporting the remaining teeth, hence these restorations must be made to conform with the forces of occlusion as they prevail in the natural dentition. If this is not done the bone structure about each tooth will be destroyed as it is subject to forces inimical to the growth of bone."

[1]Hemley, Samuel: Fundamentals of Occlusion, Philadelphia, W. B. Saunders Company, 1944, p. 15.

Similar Methods Employed in Two Cases

To accomplish a more comfortable and efficient lower partial denture the indicated procedure was completed in the following cases:

Case One—In this case the maxillary jaw was edentulous. In the lower, the mandibular left central incisor, right central and lateral incisors and cuspid were present. The patient had discarded a previous lower partial which was uncomfortable.

Case Two—The patient in this case who presented for a lower partial denture had been wearing an acrylic restoration supplying all teeth distal to the mandibular left lateral incisor and the lower left second bicuspid. In the maxilla a nonprecious metal and acrylic partial denture replaced the maxillary right cuspid, the maxillary left first and second bicuspid, and the first and second molars.

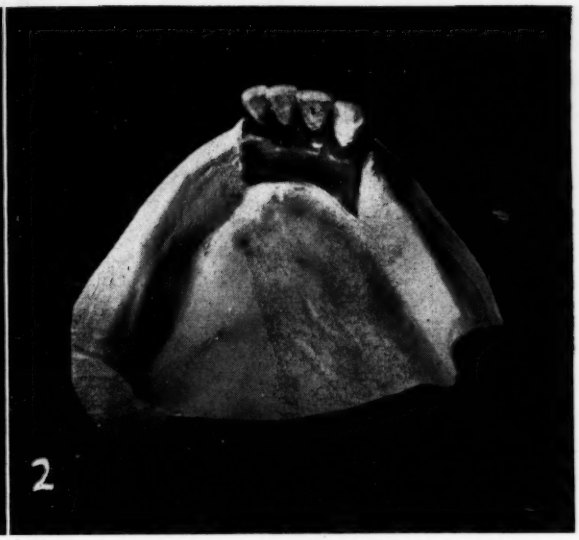
The patient complained that the lower denture was too thick in the anterior region, was cumbersome, restricted the tongue and hindered speech.

The lower left lateral incisor was removed because of disease, and a new case initiated.

Procedure

For the construction of lower partials, procedure which was similar in

1. ***Lower sectional impression.***



2. ***Duplicate model with relief outlined.***

both these cases, included the following steps:

1. An alginate impression of the lower jaw was taken and a model poured.

2. Baseplate wax was adapted over the saddle and lingual areas of the cast on which was fabricated a self-curing acrylic impression tray.

3. This spaced tray was trimmed short of the peripheral outline and below the gingival margins of the teeth.

4. Several small wire staples cut from paper clips were heated and embedded in the superior surface of the impression tray around the area of the teeth.

5. A muscle-trimmed impression of the edentulous ridges was taken with a zinc oxide-eugenol impression paste. Excess material which exuded upon the teeth was removed. The peripheral borders and the lingual frenum attachments were clearly defined.

6. With the primary impression in position within the mouth a small perforated tray filled with alginate or hydrocolloid was placed over the teeth. This material engaged the staples so that the entire impression was removed in one piece (Fig. 1.)

7. A master model and a duplicate of the lower impression was made.

8. Counter impressions, models, and bite registrations completed, the case was articulated.

9. A wax relief was outlined on the duplicate lower cast which extended up to and slightly below the crest of the cingulae of the remaining teeth and included the interdental spaces and the area illustrated in Figure 2.

Additional Steps in Procedure—

1. This model was then duplicated into a refractory model for casting purposes. Teeth were set up on the articulated casts up to the point where the mandibular arch begins to straighten posteriorly, which is usually in the second bicuspid area.

2. Plaster matrixes were made to ensure proper positioning of the artificial teeth in subsequent operations.

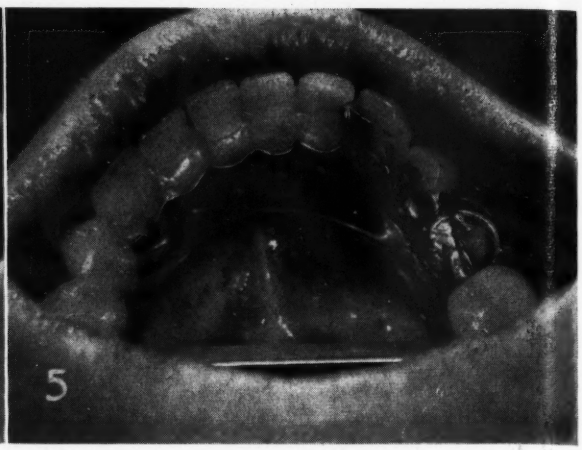
3. Using the matrixes as a guide, this set-up was transferred to the refractory model and the teeth luted to the ridges with wax.

4. The lingual wax parts of the denture teeth were carved to contour and a lubricant applied to these surfaces.

5. Casting wax was adapted as outlined in Figure 3. The waxing was

3. ***Wax-up on refractory model showing use of plaster matrix and outline of casting.***

4. ***Lingual view of restoration for Case 1.***



5. ***Lingual view of restoration for Case 2.***

extended slightly above the cingulae of the natural teeth.

6. The artificial teeth and their wax attachments were then removed from the wax-up and the casting completed in metal.

7. The metal casting was placed on the articulated cast and the full complement of teeth set up, again using the matrixes as a guide.

8. The case was then tried in the patient's mouth and after all necessary adjustments were made, the remaining parts were processed in acrylic.

Restorations Successful in Both Cases—After the completed restorations were worn the reactions of the patients in these two cases were similar: they stated that these lower replacements were more comfortable and efficient in comparison to their previous ones. The replacements provided more freedom for the tongue and did not impede speech.

Observation—After several months had elapsed, the patients were recalled to the office for examination. The following conditions were noted: (1) The tissue tone was excellent, (2) there was no irritation present, and (3) the natural teeth were firm. The same conditions were evident one year after insertion.

Summary of Advantages

A metal casting for partial dentures, constructed lingual to the natural teeth in the anterior segment of the mandible, has the following advantages:

1. Greater strength, and a smooth surface is supplied with less bulk than with the use of other materials.

2. More tongue room and greater comfort are provided for the patient.

3. Proper physical conditions for enunciation are established.

4. The extension of the metal casting on the natural teeth acts as a splint and stabilizer for the restoration.

5. When the model is relieved as outlined and the restoration constructed as described, the forces exerted on the natural teeth will be such that they tend to maintain the health of the supporting bone structure.

6. This method may be applied in various situations according to the judgment of the operator.

7. The construction of the partial denture described is such that it is easily repaired.

1819 *Broadway.*

Mandibular Cyst of Uncertain Origin: Report of a Case

(*Continued from page* 499)

cyst in the right mandibular cuspid-bicuspid region.

3. Although the roentgenogram revealed no root fragment in the vicinity of the cyst at the time, a history of exacerbations of acute episodes with drainage definitely suggests the possibility that an associated deciduous root fragment could have been sloughed or passed with the débris and fluid which drained from the cystic cavity.

4. The author favors the concept that this cyst arose from the epithelial débris of Hertwig's sheath associated with a retained deciduous root fragment which has been sloughed, but it is realized that the evidence supporting such a view is circumstantial.

Section of Dentistry,
Mayo Clinic.

The EDITOR'S Page

IRRADIATION from x-rays is not without danger to the patient and to the dentist. Of the two, the dentist is subject to the greater hazards because he is more frequently exposed to radiation injury. The dosage used in dental radiology is not enough to injure the patient considering the infrequent exposures that are necessary in dental diagnostic and treatment procedures.

Radiation damage is delayed and cumulative. Unlike exposure to an open fire where a burn is immediately apparent, an x-ray injury is not seen or felt at the time of exposure. Injury takes the form of burns, changes in blood cell tissues, and possible destruction of procreative function.

Among dentists x-ray burns on the fingers from the practice of holding films are quite common. Some of these burns undergo malignant degeneration and amputations are necessary. According to English:[1]

"Skin lesions of a malignant nature do not develop immediately, but are late in developing—as much as two to 20 years from the last exposure. Usually there is a sequence of symptoms in the exposed area, the lesion becoming progressively worse. There is no evidence whatever to suggest that a skin cancer would develop from a single mutational step induced by radiation but, instead, certain precancerous changes always precede the tumor formation. Some of the early changes which may occur after a long-time exposure to minimal doses are atrophy of fingerprint ridges, alteration of terminal vessels in fingernail beds, redness, drying and scaling of the skin (dermatitis), formation of warts and fissures, or actual ulceration. After an ulcer fails to heal, or intermittently heals and breaks down for a period of time, signs of uncontrolled proliferation of the epithelial cells may be demonstrated in histological sections of a biopsy taken from the lesion, and malignancy is most probable."

Studies among radiologists indicate that the incidence of leukemia is greater among them than among the general medical population. Further investigation should be made among dentists to determine if this malignant pattern holds true among dentists who do x-ray work. There is no unanimity of opinion among biologists concerning the gene mutations and sterility among x-ray workers.

So far as the patient is concerned, English does not feel that there is any great danger provided the dentist avoids needless exposure to direct and secondary rays. In a full mouth dental examination there is no danger to the patient.

By the simple maneuver of standing directly in front of the patient and as far away as possible, the danger of stray or secondary radiation is reduced to the minimum. The dentist who stands two and one-half feet from the patient's head may make 20 full mouth exposures before he approaches the tolerance dose; at three feet, 25 full mouth exposures; at five feet, 72 full mouth exposures. English states:

"Under ordinary conditions, if the operator remains out of the path of the x-ray beam and is two and one-half feet from the center of the field of irradiation he requires no other protection from scattered or secondary radiation."

To summarize the hazards of dental radiography, English writes:

"Either the patient or the operator may be damaged by excessive amounts of radiation, and the biologic effects which result are somewhat cumulative in nature and very resistant to healing. The outward signs of damage may not be apparent for a long time following a series of exposures. While the results of excessive exposure may be serious, it is also true that needless overexposure may be prevented by following a few simple rules:

"1. New equipment should be checked for leaks.

"2. Proper cones and filters should always be used.

"3. Dental x-ray apparatus should not be used for fluoroscopy.

"4. The operator should remain out of the path of the x-ray beam and two and one-half feet away from the center of the field of radiation.

"5. The operator should *never* manually hold the film in the patient's mouth.

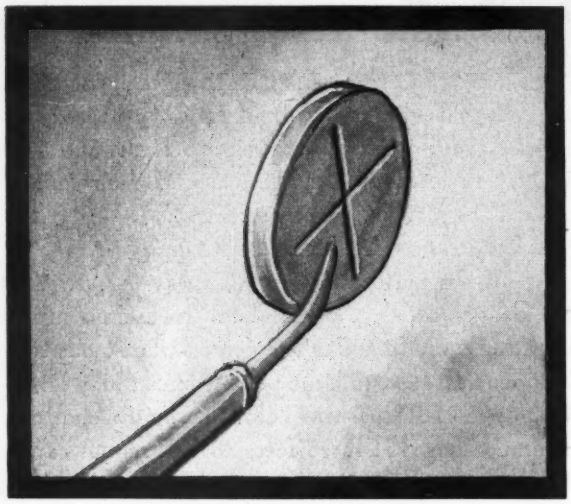
"6. Needless radiographs should not be taken.

"7. The dentist should take full histories of his patients, including both previous radiation therapy and occupational exposures to radiation.

"There are no dangers in dental radiography when the above rules are followed, when the basic biophysical principles are understood, and when a sound technique is followed."

[1]English, James A.: An Analysis of the Dangers of X-ray Irradiation, Dental Radiography and Photography 25:No. 1, 1-7, 1952.

Clinical and Laborator

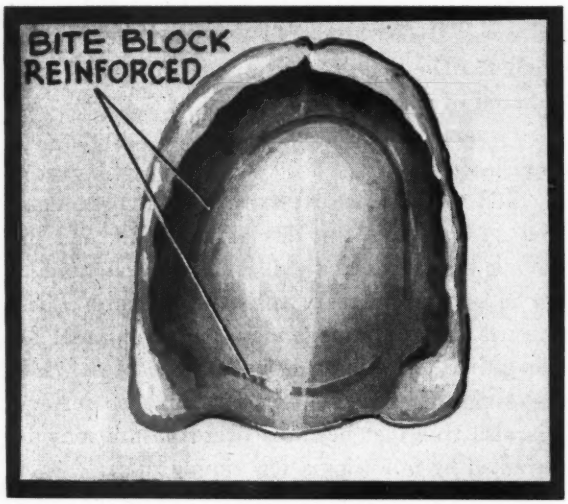


1

Protection of Dental Mirrors

D. L. Galloway, D.D.S., Portland, Oregon

1. To prevent mouth mirrors from being scratched and marked when using stones and discs, place an X on the back of one or two old mirrors with a Joe Dandy disc. Use these marked mirrors whenever an operation is being performed where stones and discs are used.

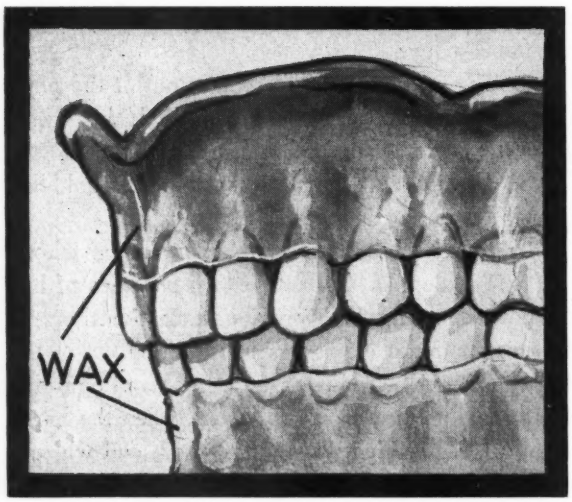


2

Steel-reinforced Bite-blocks

F. E. Morton, D.D.S., Hurley, New Mexio

2. A bite-block may be reinforced by using sections of steel paper clips. All waxed bite-blocks should be reinforced to prevent distortion and breaking.



3

Time-saver with a Denture Reliner

Ian M. Hay, D.M.D., Woonsocket, Rhode Island

3. All surfaces of the denture where the reliner is not desirable should be covered with a coating of wax before applying the relining material. The wax is removed after the reliner has hardened.

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For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10.00 on publication.

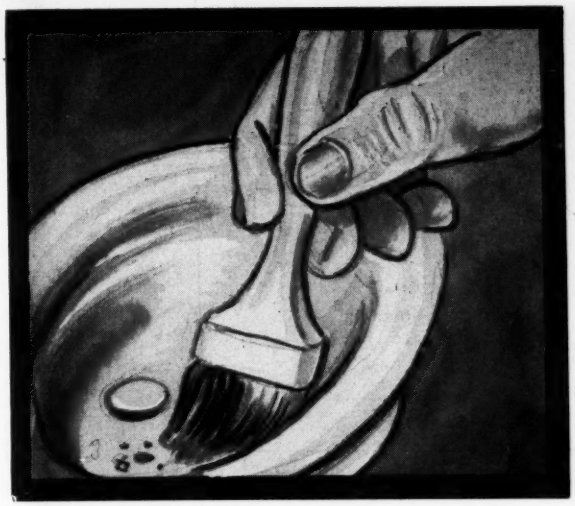
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Cleaning the Cuspidor on the Dental Unit

C. E. Wilkins, D.D.S., Tunica, Mississippi

4. A small inexpensive paint brush is used to remove debris from the cuspidor.

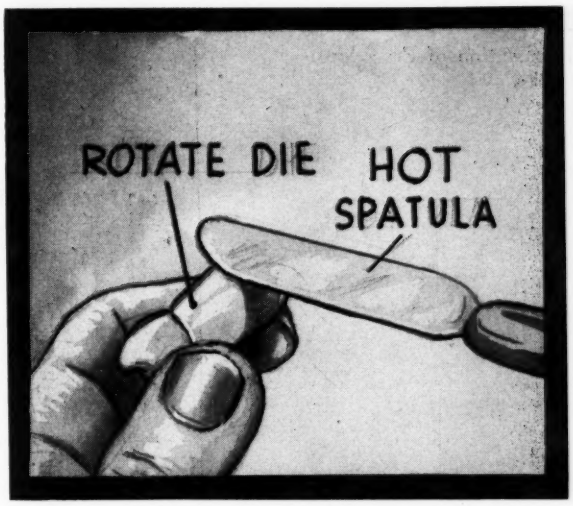


4

Rounding Metal Dies

Erwin C. Lubit, A.B., D.D.S., Brooklyn, New York

5. Grinding metal dies is tedious and objectionable because of the danger of inhaling metal particles. A simpler way of trimming is to hold the die against a heated spatula and rotate to get the desired shape.



5

Improving Appearance of Perforated Impression Trays

Albert Kohn, D.D.S., Danbury, Connecticut

6. Discolored aluminum perforated trays may be improved in appearance by painting them with aluminum paint and allowing them to set over night.

6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 506 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 504 *and* 505)

Form to be Used by Contributors To: Clinical and Laboratory Suggestions Editor

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Suggestions submitted cannot be acknowledged or returned.

$10 will be paid on publication for each suggestion that is used.

MEDICINE *and the Biologic Sciences*

Intraoral Cancer—General Considerations

Intraoral cancer includes malignant tumors of (1) the mucous membrane of the cheeks, (2) gingiva, (3) soft palate, (4) hard palate, (5) tongue, (6) floor of the mouth, (7) faucial pillars, and (8) tonsils. These account for approximately 8 per cent of all human malignant disease.

The greatest incidence of intraoral cancer is in the fifth and sixth decades. Men are more frequently affected than women, in a ratio of five to one.

Because of their accessibility, this group of malignant diseases should be diagnosed early and adequate treatment instituted. Each group of the disease produces a somewhat different biologic and therapeutic problem, depending on location, blood supply, and lymphatic spread. However, one common factor is consistently found although less marked in cancer of the upper gingiva and palate: the early production of cervical metastasis.

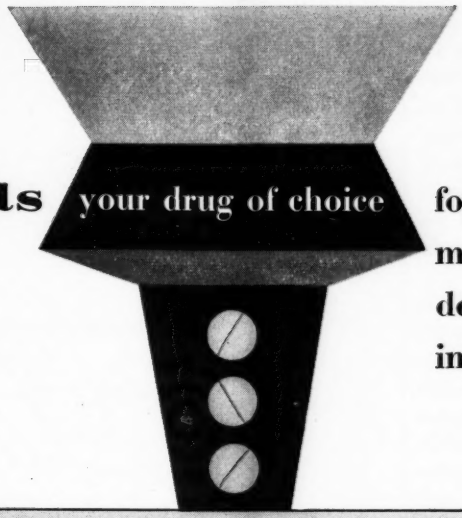
In most instances these malignant diseases are disseminated by lymphatic embolism and not by the blood stream. It is essential, therefore, not only to eradicate the primary lesion, but also to direct attention to the lymph node drainage area.

There is probably some causal association of oral malignant diseases and oral sepsis, biologic and physical trauma such as ill-fitting dentures, rough and ragged teeth, a rim of tartar around the gingiva, tobacco, syphilis, and benign lesions such as broad base papillomas or chronic leukoplakia.

Squamous cell carcinoma accounts for approximately 95 per cent of intraoral cancers. These tumors, when they involve the mucous membrane of the gingiva, soft, or hard palate, are rather superficial but after a period of time perforate and extend into the antrum, bone of the palate, and gingiva; or if located near the angle of the mandible or maxilla, into the pterygoid fossa. On the other hand, those occurring on the mucous membrane of the cheek frequently produce large verrucose polyp-like tumors so bulky that they almost fill the mouth. Fortunately, this type does not produce extensive infiltration or early metastasis. Frequently a cancer involving the gingiva and hard palate may be obscured for indefinite periods of time by a denture and be considered a trophic ulcer.

Malignant lesions involving the tongue and floor of the mouth, as a group, begin as ulcers and early infiltrate the deeper structures of the tongue and/or floor of the mouth. Usually malignant lesions occurring on the anterior two-thirds of the tongue are well-differentiated squamous cell carcinomas. Those on the posterior third are more anaplastic, less well differentiated, metastasize earlier, and are more sensitive to irradiation therapy. Metastases from the lower gingiva, tongue, floor of the mouth, and tonsils occur extensively and with great rapidity.

To detect early malignant disease, the entire oral cavity must be carefully examined with adequate visualization. Any thickened area or ulceration with a soft or hard base should be palpated with the gloved finger. A lesion persisting over a period of three or four weeks should have adequate biospy. In most instances, the gross



Pentids your drug of choice for the more common dental infections

Efficacy of Antibacterial Agents against Various Organisms in Oral Cavity

Organism	Sulfonamides	PENICILLIN	Streptomycin or Dihydro-streptomycin	Aureomycin or Terramycin	Chloramphenicol
Hemolytic streptococci					
Group A	B	A		B	B
Group D		A	— combine — A	B	C
Other Groups		A		B	B
Streptococcus viridans		A		B	B
Staphylococcus	B	A	B	A	B
Pneumococcus	B	A		B	B
C. diphtheriae		A (plus serum)		B	
Vincent's organisms					
Borrelia vincenti		A		B	B
Fusiformis dentium		A		B	B

A Drug of Choice B Effective C Moderately effective, some activity

just 1 or 2 Pentids Tablets three times daily for:

acute oral Vincent's disease with other appropriate dental procedures, and as adjunctive treatment of pericoronitis, alveolitis, dento-alveolar abscess, cellulitis, and osteomyelitis. Also for prophylaxis before and after tooth extraction and other dental surgery.

When pre-existing cardiac lesions predispose to subacute bacterial endocarditis or there is extensive tissue trauma, parenteral penicillin should be given before or at time of extraction followed by Pentids postoperatively.

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appearance of the cancer permits a diagnosis.

Carcinoma occurring along the posterior third of the tongue, or the occlusal line of the buccal mucous membrane is painful early because of associated induration, infection, and trauma, with resultant inability to masticate food and swallow normally. When a buccal cancer infiltrates the buccinator, masseter, and pterygoid muscles, trismus results.

It is essential to determine by roentgen examination if there is a bone invasion in extensive malignant lesions occurring on the soft or hard palate or gingiva. Lymph nodes in the drainage area must be carefully palpated to determine if they are involved. To effect a cure it is essential to eradicate the involved lymph nodes, as well as the primary lesion, since oral cancer often remains localized to the mouth and lymph node drainage area, even in advanced stages.

Hendrick, James W., and Ward, Grant E.: Treatment of Intraoral Cancer, JAMA **150**:1099-1103 (*November* 15) 1952.

Maxillary Fractures

Most of the fractures of the maxillae seen today occur as a result of automobile injuries. Severe facial injuries are noted in a ratio of over four to one in persons occupying the front seat beside the driver. Most of the patients are women. Since most of the fatalities occur in the guest passenger seat it has been referred to as the "death seat."

Persons riding in this seat receive three general types of injuries:

(1) When the patient is thrown forward, the head hits the windshield glass. Often a wide hole is made in the glass and the face comes down on the jagged edge, receiving numerous and irregular cuts of the facial skin as well as occasional fractures of the nose, malar, or maxillary bones.

(2) Type two is even more disastrous to the maxilla because in this type the head strikes the windshield first and the face is then thrown forward on the top of the dash. Here frequently are located numerous gadgets, knobs or at least a metal covering which are accountable for many crushing injuries of the face.

(3) In the third type the patient's face is thrown directly into the dash. Women especially are victims of this kind of injury and babies are frequently killed while riding on the mother's knee, the child's head being hurled into the dash at the time of accidents or sudden stops.

Occasionally the driver receives a serious maxillary fracture when his head is thrown forward and the chin, teeth, or face strike the steering post or rim of the wheel with such force that fractures result.

Malar bone fractures must be considered along with fractures of the maxilla. Since the malar bone is more prominent it is often the first site of impact and thereby frequently injured. The examination of facial bones is a highly important feature because swelling occurs so rapidly after such an injury that unless early, careful examination is made, fractures of the malar and often the maxilla are missed. The resulting deformity is often a source of embarrassment.

Malar bone fractures should be treated early for the longer treatment

is delayed, the more difficult it is to elevate a depressed malar bone into proper position. Radiographs should be taken if the patient's condition permits. They should be taken cautiously without too much movement of the head because of the possibility of brain injury or skull fracture.

Midline fractures of the maxilla are easily detected. One rather characteristic sign in fractures of the maxilla is that the entire middle third of the face is unduly elongated in comparison with the rest of the face. Maxillary fractures per se are of several varieties. Usually treatment must be adapted to the individual case.

Prevention of these fractures is most important. Elimination of gadgets, and cranks, and applying a sponge rubber crash pad as a permanent fixture or as an accessory would do much to prevent these injuries.

Straith, Claire L., and Straith, Richard E.: Fractures of the Maxilla, J. Michigan State M. Soc. **51**:1319-1324 *(October)* 1952.

Antabuse® Therapy

The medical profession has become seriously interested in the treatment and care of the chronic alcoholic. It is quite well recognized that psychiatric therapy offers the most for these patients. Alcoholics Anonymous presents a valid layman's approach to group psychotherapy.

The psychiatrist has been aided by the use of various drugs. The most recent adjunct to the armamentarium of the psychiatrist is the use of tetraethylthiuram disulfide, (antabuse®). This medicament functions, not as a conditioned reflex, but by actually altering the body metabolism to give unpleasant physical and emotional responses to the intake of alcohol, by any route of administration.

The pharmacodynamic effect of antabuse is said to be mediated through incomplete oxidation of alcohol, whereby the chemical reaction is slowed or stopped at the aldehyde stage. The reactions to the intake of alcohol during drug therapy are: (1) intense erythema, (2) flushing, (3) tachypnea, (4) dyspnea, (5) tachycardia, (6) palpitation, (7) fall in blood pressure, (8) headache, (9) nausea, and (10 vomiting.

The drug is to be used with caution as there have been reports of serious toxic manifestations such as psychoses, cardiovascular insult, and death.

Some of these toxic manifestations are in reality reactions due to the concomitant repeated intake of small amounts of masked or unknown alcohol, in the form of ordinary simple medicines or even perhaps by percutaneous absorption or inhalation of alcohol during the use of alcoholic preparations such as after-shave lotion.

Fiske, David: "Psychotic Reaction" to Tetraethylthiuram Disulfide (Antabuse®) Therapy, JAMA **150**:1110-1111 *(November* 15*)* 1952.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912.

Of Dental Digest, published monthly at Pittsburgh, Pa., for October 1, 1953.
State of Pennsylvania.
County of Allegheny.

ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of the Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the name and addresses of the publisher and editor, are: Editor, E. J. Ryan, B.S., D.D.S., 708 Church Street, Evanston, Ill.; Publisher, M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.; Managing Editor: None; Publication Manager, R. C. Ketterer, 1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are: Dental Digest, Inc., 1005 Liberty Ave., Pittsburgh, Pa.; Oral Hygiene, Inc., 1005 Liberty Ave., Pittsburgh, Pa.; M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.; Lynn A. Smith, 1005 Liberty Ave., Pittsburgh, Pa.; S. M. Stanley, 7 East 42nd Street, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs above giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no record to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

(Signed) M. B. MASSOL,
Publisher

Sworn to and subscribed before me this 22nd day of September, 1953.

(Seal) N. M. Gaertner, Notary Public.

Contra-Angles

Healthy Human Nature

An office visitor was telling me the other morning that he finds himself getting more cynical as the years go by. He says that he is becoming more suspicious of people and their motives. That is not good; that is beginning paranoia. The next step is to begin to think that people are talking behind your back. Following that comes the delusion that someone is lurking in the dark to commit an assault upon your person. When you begin to hear voices that are not there and to suspect assassins that do not exist it's time for expert help.

One of the most encouraging signs in the past ten years is the interest that dentists are taking in the problems of mental health, as well as in oral health. We have learned that we are dealing with much more than a face full of teeth, natural or otherwise. The teeth are hooked up with the blood and nervous systems and are an integral part of the total personality. What disturbs the teeth lays stress upon the whole body. Despite how much we know about the dental organs and their treatment our ministrations will not be fully effective until we know more about the personality behind the teeth.

We will not run into many people in dental practice who have full-blown paranoid tendencies. We will see a few incipient ones. Few of the people who come to us in private practice are out-and-out psychotics in any form. The people that we do see are nervous, anxious, apprehensive, restless, uneasy, mildly disturbed. They are sufferers from the universal disease of our time: anxiety. To cope with them adequately, we must first have an idea of the potentialities of human nature and a knowl-

edge of a healthy personality. We cannot evaluate the abnormal until we know the structure and function of the normal. In the world of the biologic sciences and arts we should not undertake treatment until we understand the principles of pathology and before we can appraise disease, we must have knowledge of normal anatomy and physiology. So it is with the personality: we must know the reasonably normal person before we can recognize the abnormal.

Lawrence K. Frank, the psychologist, writing in the March, 1953 issue of *Annals of the American Academy of Political and Social Science*, describes human nature and human personality in these words: "Human nature is amazingly flexible and plastic, with many potentialities that are shaped and patterned into the many different personality-character structures favored or sought by each cultural group for its social order. This plastic human nature may be developed into healthy personalities or may be stunted, warped, distorted, and otherwise deformed into the familiar picture of the neurotic, the mentally disordered, the delinquent and criminal, the alcoholic and drug addict—all the familiar varieties of self-defeat and antisocial personalities.

"As long as we believe that human nature is fixed and unchangeable, that these human disasters are inevitable, and accept the age-old conviction that man is depraved and prone to evil, our thinking and our efforts will be compromised, if not wholly blocked, by these beliefs and expectations. Therefore it seems almost indispensable to a mental health program to assume that human nature, despite the great mass of clinical material on the destructive, self-defeating personalities who fill our mental hospitals and crowd our clinics, is not innately depraved or enslaved by destructive instincts. We must, as a prerequisite to any program for mental health, assume that we can develop healthy personalities, utilizing the flexible potentialities of human nature. This implies that man, the mammalian organism, becomes a human being and personality, for good or ill, according to the way he is reared, culturized, and socialized, and what image of the self he gains from his relations with others. This does not ignore the existence of various forms of mental illness that may be inherited or may be produced by infections or traumas.

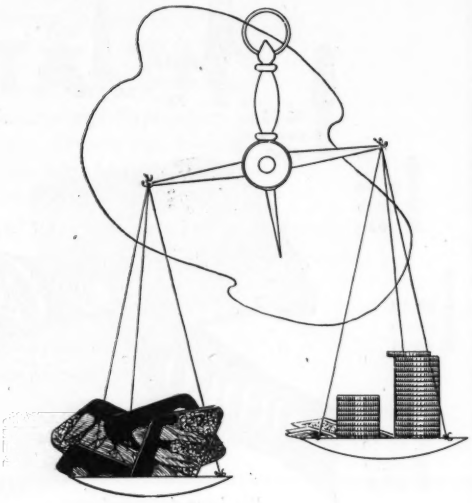
"These old beliefs about human nature are deeply embedded in our traditions and are continually being reinforced. We find it difficult, therefore, to believe in human nature, just as we have long distrusted and felt contempt and shame for the human body and its functioning.

"The idea of health care through the protection and better nurture of healthy human organisms has long been obstructed by various beliefs about the human body as corrupt and prone to illness.

"Today we recognize that the human body can and does develop the many forms of illness, dysfunction, pathology, and malignancies which

In your ORAL HYGIENE this month

An Honest Diagnosis Is Still Best



"Instead of being in the golden age we are now in the days of the golden fleece," says Doctor Edward L. Wharton. He cites cases which have come to his personal attention to prove his point. He believes that the majority of dentists are professional men of integrity who will be as concerned as he is with the problem of colleagues whose treatments are more remunerative than remedial.

★ ★ ★

Dentists serving as air-raid wardens during the last war may have remembered another dentist who was the grand-daddy of all "wardens," Paul Revere. Some may even have envied him the horse as they stumbled over curbs in the blackout. But how many know that Revere, a mediocre dentist himself, nevertheless influenced the lives of two of the really great men of the profession? Doctor Howard R. Smith tells the story.

★ ★ ★

"What would you do if you broke a leg and were incapacitated for seven or eight weeks? And what do you think your patients would do while the break was mending?"

That question set off a series of discussions that resulted in four dentists developing a mutually beneficial system for protecting their practices in case of illness.

★ ★ ★

"How To Reduce Discord Among Dentists" proved an interesting subject to both general practitioners and specialists. An Oral Hygiene author, Daniel S. Schechter, queried both groups of dentists and received some interesting answers. His questions covered general practitioner-specialist relationships, fees, and the patient relationships of both groups.

One dentist summed up the whole situation neatly: "All it would take for more harmonious relationships would be a little more light and a little less heat."

★ ★ ★

"You Can Be An Effective Speaker" —if you will just observe five simple rules which will add the necessary touch of showmanship to your talk.

Audiences respond to these psychological "tricks," and every successful public speaker knows and uses them. Whether you are asked to give a paper before your local society or to address an audience of thousands, you, too, can make good use of these simple, effective aids.

★ ★ ★

Doctor Fred D. Miller tells an interesting tale of dentists who not only talked about diet but did something about it, and started the entire student body of Fairleigh Dickinson College upon a nutritional program toward improved dental health.

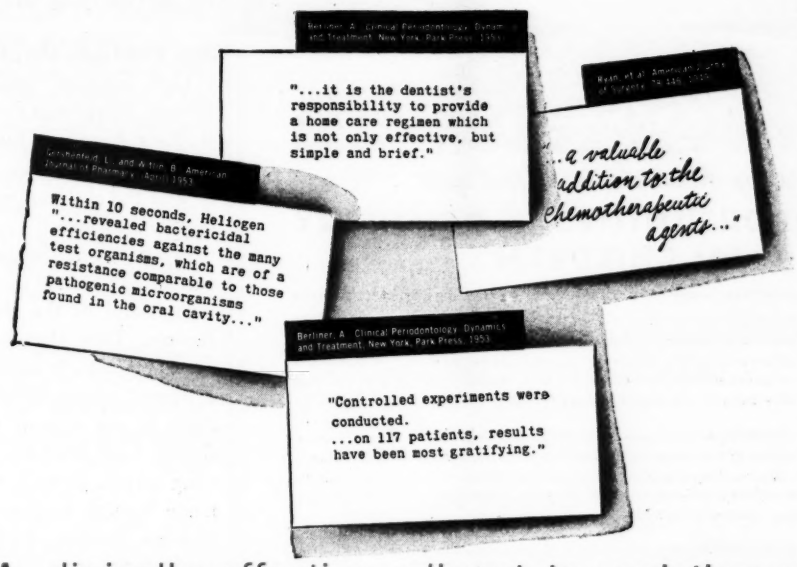
A special whole-wheat bread was developed by the researchers, baked and distributed by a commercial baker, and sold under a royalty agreement. The proceeds are used for scholarships.

medicine is struggling to treat and prevent; but when given adequate nurture and protection from various hazards and threats, it is evident that the human body can and does exhibit vigorous, full-functioning and organic fulfillment, with prolonged life.

"In similar terms we may say that the human personality may be stunted, warped, distorted, exhibiting many forms of neuroses and mental disorders, when mistreated or neglected and deprived; but the personality is capable of becoming a healthy, full-functioning, responsible person if provided with the loving care, nurture, education, and interpersonal experiences that evoke and develop these essentially human potentialities, *and* if the social order in which such personalities live does not continually threaten and undermine these initially healthy personalities.

"Here it should be made clear that the ideal of healthy personality is not that of a 'perfect' person who has no problems or feelings or who is perfectly 'adjusted.' Rather the conception of healthy personality, as we today may tentatively state it, is of a person who recognizes the life tasks and problems that living in a social order and in a symbolic cultural world presents to every person, but who meets them with self-confidence, courage, and the ability to conduct his interpersonal relationships with generosity and dignity, responding with feelings that are appropriate to his stage of development.

"Thus in promoting mental health we are concerned with the question of how individual personalities can, at each step and stage, be strengthened to meet their life tasks, not by 'solving' their problems but by reformulating their problems (which as personalities they create for themselves), by reorienting their idiomatic way of seeking the goal values of our traditions and their ways of striving for their aspirations, which, as we know, are often self-defeating. Healthy personalities are to be viewed as individuals who continue to grow, develop, and mature, accepting the requirements and the opportunities of each successive stage of life from infancy through the now available years



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Clinically proven as an effective therapeutic agent, **HELIOGEN** is used for direct application in the office and by the patient in his home care regimen. **HELIOGEN** offers optimum maintenance of the soft tissues of the oral cavity before and after periodontal procedures.

HELIOGEN is used as a rinse, spray or gargle. One tablet dissolved in four fluid-ounces of lukewarm water provides 25 mg. of Nascent (free) Iodine. Ultraviolet radiations in small amounts are also generated.

HELIOGEN *is available in individually foil wrapped tablets on prescription in boxes of 20 and 50.*

For samples, additional information and prescription pads please write.

- vincent's infection (necrotizing gingivitis)
- marginal periodontitis
- marginal gingivitis
- pericoronitis
- aphthous ulcers
- pre- and post-operatively

and other oral conditions of an infectious nature

High bactericidal and fungicidal activity
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of old age and finding the fulfillments they offer without paying too high a cost personally or socially as they participate in maintaining social order and carrying on our culture."

My Friends David and Anne

Last summer when I met my friends, David was five and his sister Barbara Anne was four. Their father was fighting in Korea and their mother and the children were visiting the mother's parents.

My youngest daughter, Judy, met David and Anne through a young man friend of the children, Johnny Powers. Then they came to me as dental patients. It has been years since I treated young children, so I took them to see one of my colleagues, Doctor Chet Thorsen. We took bitewing x-rays, cleaned their teeth, and made topical application of sodium fluoride. Neither child had a cavity. Their teeth were as shiny clean as their faces, their hair, their clothes. Everything about them spoke good health and loving home care. They were perfect dental patients: no whimpering, no whining, no hanging back.

After their appointment they visited us at our home and the day that Judy left for college they came to wish her farewell. Between these times, we saw them on several occasions and each time they grew in our affections.

If it is true that the future may, in part, be read from the present and that the long shadow of the adult may be foretold from the little shadow of the child, my friends David and Anne have bright years ahead.

Upon what is this prophesy based? What do we find in the child that may give us a clue to the adult? I suppose the child psychologist would say that an integrated personality is the thing to be hoped for. Integration simply means parts fitting together; fitting smoothly and without strain. If a person is so fortunate as to have all physical parts mesh without discord it means he has organs and tissues that function without symptoms and below the threshold of awareness. If one is integrated his

mind works with quick adaptations, with clear perception, without distorted images. And finally, if one is integrated he has a spirit that is free, that is full of faith and without fear. On these three levels my friends David and Anne show fine qualifications and brilliant promises.

Anne is blond and full of grace. She is shy with the wisdom of a little girl. David smiles widely and expresses himself with words of color and exactness that many grown-ups never learn to use. His mind brims over, fertile with imagination. He is rugged in body and strong in human comprehension; he is gentle with strength.

When Anne grows to womanhood she will likely marry an Army officer as her mother and both her grandmothers have done. She will be as fine a woman as they are. With courage they have seen their men go to war three times in their lifetime. Pray God that Anne and other girls of her age will be spared this.

When David comes to man's estate he will probably follow in the careers of his father and his two grandfathers and become an Army officer. Then in a later day, for the land that we love, I hope that his gay spirit, his vigorous mind and body, his deep well of human understanding will be put to another job. It would have to be at least thirty years before that day would come because our Constitution makes that provision. One day, for the welfare of the Nation, he may occupy the big White House where his grandfather now lives; the grandfather that he resembles so much in body, mind, and spirit.—E. J. R.

THE ENDOCRINE system will provide more shocks, both for the experimentalist and for the doctor at the bedside, though the pattern ultimately revealed may have that simple elegance which usually lies at the basis of Nature.

From *British Medical Journal* No. 4832:384 (*August* 15) 1953.

Medical Problems in Management of Cancer

DANIEL LASZLO, M.D., and HERTA SPENCER, M.D.

Conclusions

Early diagnosis and improved management of cancer patients need not await tomorrow's discoveries. These can be accomplished with the present-day methods, by more and better trained general physicians, and by a change in the management of this disease.

Delay in Diagnosis—In the prevention of cancer, environmental factors should be carefully evaluated as possible carcinogenic agents; precancerous lesions should be promptly treated.

The causes for the delay in diagnosis have been dealt with extensively in numerous publications. Full and early use of the diagnostic tools in periodic examinations of asymptomatic persons and especially of those with symptoms could remedy this serious delay.

Surgery—Radical surgery is occasionally refused because of advanced age; or because of medical complications; or because of the assumption of local spread of the tumor or distant metastases. With the advances in surgery and anesthesia, age alone is rarely a contraindication to surgery; with proper treatment of medical complications and modern preoperative care, patients previously considered unsuitable for surgery can now be operated on with safety.

Errors have been made by assuming local spread of the tumor or distant metastases when none was present. These errors could be minimized by careful and critical evaluation of the evidence upon which this assumption has been based.

Should the tumor not be resectable, palliative surgical procedures should be carried out at the time of exploration; better palliation with less operative risk results therefrom.

Importance of Medical Attention—Patients with advanced cancer require considerable medical attention

as is true in any chronic disease. Problems of ambulation, nutrition, hydration, the evaluation of the patient's pain pattern and the selection of suitable analgesics require careful consideration.

Palliative Measures: Radiotherapeutic, medical or surgical measures when applied early and fully add to the comfort and prolong life of the patient.

Differentiation of Medical and Surgical Conditions: Unrelated to malignancy which the patient once had or still has there is no one better qualified to differentiate between medical and surgical conditions than the general physician. It is safer to assume that complications are of non-malignant nature unless proved otherwise. Such an attitude promotes a more active diagnostic and therapeutic regimen.

Continuity of Medical Care: A closely knit single team of the family physician and specialist is the best guarantee of this continuity. All too often a patient is transferred from an acute to a chronic hospital, then to a home for incurables. His morale is thereby lowered, his confidence destroyed and the efficiency of his treatment greatly impaired.

Disclosure of Diagnosis

Whether to disclose or to withhold the true diagnosis and prognosis from the patient has been widely discussed. No general rule seems applicable to all patients. However, for the majority, no benefit seems to be derived from such disclosures; a grave and at times unbearable burden is put on the patient when he is least able to carry it and needs the most psychologic and physical support. The fear associated with this diagnosis in the minds of the public is so great that its disclosure often induces an acute depression and, not infrequently, suicidal attempts have been made. Man lives by hope. Truly rare are the reasons which justify its deprivation. Sharing the responsibility with the family, and presenting the patient with a concise, unhesitating plan of management, usually avoids difficulties.

Members of the family often request information on the probable duration of the illness. It is safe to assume that the patient will be one of the exception who will be able to carry on his daily activities longer than expected.

While an intensive and relentless search for the "great discovery" must go on, optimal use of all methods now available should help to alleviate today's pressing problem.

Adapted from *Medical Clinics of North America* **37**:881-883 (May) 1953.

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